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CONTENTS OF VOLUME VII.

A.

Abandoned Wells and Cesspools.........113
Aborigines and Hygiene................449
Adaptability to Circumstances........... 44
Adulteration, Ancient Punishment for....549
Adulteration in the United States........436
Aerial Transmission of Influenza........605
  Typhoid 502
Aesthetic Dress in Children.............. 58
After La Grippe........................114
Air Eating 214
Airing Clothing........................219
Alcohol, Abuse of..................... 65
Algiers, Street in......................667
Allen, Mary A., How to Leave off Corsets 95
Almonds, Sulphured.....................435
Altoona Water Supply.................. 1
Always Well at Our House..............219
Ammon, Dr., Diet for Young Children...468
Ancestral Sinning......................367
Ancient Hindu Vaccination 605
Ancient and Modern Purification of Water.............................608
Ancient Punishment for Adulteration....549
Anders, H. S., Public Health Indispensable 562
Anus Itching and Coffee................330
Apparel Proper.........................215
Arab Women........................... 32
Aristocracy, the Condition of............ 23
Arrow Poison in the New Hebrides......609
Arsenical Wall Papers in England.......495
Arsenic Examinations..................328
Artificial Teeth and Hygiene............127
Athletics in France......................547

B.

Babies Nursing.........................251
Baby's Bath Temperature...............490
Bacteria of Melons.....................378
Bacteriology 64
Bacteriological Institute................597
Baker, H. B., Prevention of Typhoid.... 102
  Work and Pay of Health Officers...............465
Baldhead, Diet for......................488
Baldness, Premature....................493
  Prevention of................ 42
Ballin, Hans, Correct Gymnastics.......615
Barber Shop, Hygiene in................277
Barometer, Home Made 45
  and Weight.................548
Bath Conveniences......................332
  Oatmeal bags for..................674
Baths, Hot.............................273
  of Helwan 674
Beast to Beast..........................117
Beauty, Highest Form..................433
Beaver, D. B. D., Typhoid a Rural Disease345
Be Cheerful............................217
Bed bugs convey tuberculosis 675
Beebe, H. E., What Does the Well Drain?479
Beef and Fish, Digestibility of..........670
Beginnings of Disease.................. 20
Belladonna and Scarlet Fever............306
Bicycle, Death on.......................605
Billings, J. S., Health of War Survivors.. 96
Black and Tan Dive.................... 85
Blindness, Law to Prevent..............375
Blood Poisoning and Cobweb............330
Boggs, E. M., Consumption and Railroad Cars..................................593
Boil Your Ice...........................612
Bonaparte's Pulse.......................602
Bone Setter.............................171
Bon-vivants, Warning to................275
Bore Bell...............................216
Bowels, Wind in....................... 40
Boys Physical Training..................216
Brain Jar...............................172
  Rest...............................127
Brains vs. Drugs........................379
Bran, Raising Children in.............. 45
Brazil and Marriage.....................324
Bread and Dyspepsia,...................377
  and Science...................... 48
Bright's Disease....................... 21
  Prevention of............267
British Nursing and Hygiene at Chicago.488
Broad Irrigation....................... 9
Brutal Custom..........................217
Bryce, P. H., Economic Value of Sanitation...................................287
Burial Customs.........................589
  Shoes!..........................538
Burns, Glycerine for....................489

Burying Without Coffins................ 44
Butter, Use of by Children................611
  Vegetable........................550
Buttons, Celluloid, Danger of...............375

C.

Calla Lilly as a Vegetable.............. 47
Cannibal Therapeutics..................372
Cardinal Manning......................510
  Newman.....................508
Carlsbad, Drinking Water at............454
Carothers, M. M., Cremation of Nightsoil, etc..........................153
Carrier Pigeons and Vaccination..........549
Cathell, W. T., Food Before Sleep.......480
Cattle and Gen. Rusk..................433
Causes of Disease..................123, 366
Celery Coffee..........................489
Cellar Dive........................... 16
Celluloid, Danger of....................375
Century Magazine in 1893............. 677
Cesspools and Wells................101, 113
Chaffing Powder for....................335
Chapped Hands.........................672
Chastity and Health....................614
Cheese.................................500
  Digestibility of..................329
Chemistry and Purity of Water.....539, 579
Chestnut Pudding.......................168
Chicago Drainage Canal................673
Chicago, Health of.....................437
  Sanitary Condition of..........547
Chief Fast Thunder's Camp.............451
Child, Care for, and Man Will Care for Self...............................547
Children and Aesthetic Dress............ 58
  and Butter.....................611
  Diet for.......................468
  Hygiene for....................312
Children's Teeth.......................678
Childhood, Exercise for................461
Chinese Bone Setter....................171
  Joss House.................... 48
  Restaurant.................... 32
  Store......................... 48
Cholera................................542
  and Filth......................603
  Among Sharks...................324
  Apropos of.....................505
  Bacilli, Bottling..............491
  and the Exposition........561, 603
  Dead, cremation of.............670
  Drawing the Line at............671
  History in Europe and America.519
  How Germany Handles........498
Cholera Look Out for......................431
  Precautions.....................130
  Prospects.......................440
  and Vienna......................491
  Infantum........................424
  is it Early Recognizable?.......653
  vs. Pure Water..................669
Christian Sanitarian....................197
Church Ventilation......................665
Cigars, Why Harmful.................. 49
Cinerary Urns...........................577
City, the...............................223
  Dust..........................276
  of Sanitation.................493
Civilization, Commercial................124
  and Pain.................... 26
Cleanliness........................121, 326
  Japanese...................328
Climate of Egypt and Disease...........608
Cobweb and Blood Poisoning............330
Coffee and Cholera.....................168
  and Itching of Anus...........330
  Tea and Coffee Berry,.........118
Cold Water, Virtues of................ 43
Columbian Exposition and Cholera..561, 603
Communicable Disease, Restriction of...107
Composition of Foods...................458
Compulsory Domicilliary Quarantine
  Against Diphtheria.......301
  Vaccination in Turkey.....489
Conn, G. P., Railway...................471
Constipation.......................490, 553
Consumptive Romance.................. 73
Consumptives Spittoon..................453
Consumption and Bad Paving...........603
  and Chest Development....423
  and Contagion............205
  and Earth Worm...........328
  and Health Boards........138
  and Railroad Cars.........593
  and the Seashore..........113
  and Theatres..............439
  and Tobacco...............492
  in Abyssinia..............438
Contagion and Flies....................500
  Hospitals.....................310
  Notification of...............162
Contagious Disease Air-tight Coffin......549
Cook, A. E., Public Health a Duty......477
Corbett, James J.....................512, 582
Corn Bread.............................327
Corsets, How to Leave Off.............. 95
Couch..................................217
Count von Moltke.......................510
Cranch, E., Scarlet Fever...............306

- Cranks ... 384
- Cremation ... 130
  - in Berlin ... 216
  - in England ... 568
  - of Garbage ... 38, 235
  - Modern ... 526
  - of Night Soil, etc ... 153
  - Progress ... 375
  - of Shelley ... 604
  - Talmage on ... 220
  - in War ... 671
  - of Cholera Dead ... 670
- Criminals, Village of ... 669
- Cummings, F. S., Restriction of Disease ... 107
- Cup at Communion ... 201
- Custom Breeds Tolerance ... 666

D.

- Damp Beds ... 460
- Danger of Being a Good Samaritan ... 488
- Davies, N. E. Y., Diet for Hot Weather ... 457
- Davis, S. T., Cholera and the Exposition ... 561
  - Faith Cure Epidemic ... 260
- Dead Sea Water an Antiseptic ... 51
- Death, Fear of ... 319
  - on the Bicycle ... 605
- Deaths Yearly ... 460
- Defective Paving and Consumption ... 603
- Dennis, D. N., Erie Water Supply ... 265
- Department of Public Health ... 128
- De Pietra-Santa, Dr., Prosper, Subterranean Paris ... 97, 133, 192, 245
- Depravity, Physical and Moral ... 438
- Diabetic Diet ... 490
- Diabetes Mellitus ... 25
- Dickinson, R. L., About Milk Teeth ... 591
- Dietaries, Competitive ... 323
- Dietetic Value of Pine Apples ... 274
- Diet for Baldhead ... 48
  - for Hot Weather ... 457
  - for Young Children ... 468
- Difficulties to Overcome ... 298
- Digestibility, Scale of ... 333
  - of Beef and Fish ... 670
- Digestion and Ether ... 121
- Dignity of the Sanitarian ... 548
- Diphtheria ... 182
  - How Carried ... 427
  - How Long to be Isolated ... 548
  - Loss by ... 295
  - Mortality of ... 326
  - and Quarantine ... 301
  - and Rags ... 322
- Disease Beginnings ... 20
  - Causes of ... 123
- Disease, Is it Preventable? ... 366
  - What is it? ... 368
- Disinfectant, Cheap ... 273
- Disinfectants ... 537
- Disinfected Clothing ... 433
- Disinfecting Foods ... 371
- Disinfection ... 429
  - of Rooms ... 277
  - with Whitewash ... 329
- Doctor in Modern Society ... 131
- Drainage of Cairo ... 323
- Drinking in German Army ... 206
  - Water and Disease ... 64
- Drinks in Fevers ... 51
- Drunkards Posterity ... 495
- Druggists, How to Clean Hands ... 129
- Drugs *vs.* Brains ... 379
- Dudley, C. B., Water Supply in Mountain Towns ... 1
- Dust Dangers ... 331
- Dust and Disease ... 551
- Dyspepsia and Bread ... 377
  - and Fun ... 273
  - from Evil Eye ... 434

E.

- Early Signs of Chronic Disease ... 20
- Earth-worms and Consumption ... 328
  - and Germs ... 541
- Early Recognition of Cholera ... 653
- Eating Air ... 214
  - to Live ... 54
- Eat Slowly ... 434
- Economic Value of Sanitation ... 287
- Edson, Cyrus, The Present and Future of Medical Science ... 92
  - Apropos of Cholera ... 505
- Edwards, J. F., Beginnings of Disease ... 20
  - How to Get Strong ... 67
  - Hygiene for Children ... 312
  - Physical Culture ... 508, 581
  - Sanitary Day ... 655
  - Suburban Life, etc ... 638
  - The Christian Sanitarian ... 197
  - Water Cures ... 454
- Eggs Manufactured ... 42
- Egypt, Diseases Improved in ... 608
- Electric Light and the Eyes ... 584
- Elevator Sickness ... 166
- Emotion *vs.* Will ... 268
- Enemies of Tobacco Smoking ... 215
- Enforcement of Sanitary Rules ... 362
- England, Cremation in ... 568
- Engle Garbage Cremator ... 242
- Epidemic, Cost of ... 373

- Epidemic of Faith Cure......260
- Epidemics and Earthquake......215
- Erie Sewer System......410
  - Water Supply......265
- Ether and Digestion......121
  - Drinking......491
- Ethnology of the United States......335
- Etruscan Cista......576
- Evil Eye and Dyspepsia......434
- Exercise, Effects of......281
  - for Childhood and Youth......461
- Experiment in Food Preservation......122
- Explosive Boy...... 42
- Exposition and Cholera......561, 603
- Eyesight, Care of...... 47
- Eyes and Electric Light......584

F.

- Faith, Blessing of......209
  - Cure Epidemic......260
- Family Physician Ideal......609
- Famine and Typhus in Russia......503
- Fat and Sterility......171
- Father Mollinger's Cures......494
- Fear of Death......319
- Feeble-minded in Russia......120
- Feeding, Artificial......438
  - Infants in France......375
- Feet Perspiring......322
  - Tender......167
- Fetid Feet......128
- Filth, Abyssinian......436
  - and Cholera......603
- Findlay, Cremation of Nightsoil, etc., at.153
- Finger-nail Polish......324
- Fish Diet and Leprosy......365
- Five Cents a Spot...... 87
- Flavor, Inoculation......276
- Fleas, to Rid House of......328
- Flesh of Poisoned Animals......501
- Flies and Contagion......500
- Flowers, Language of......482
  - Odor of......482
- Fluids with Food......603
  - Meals......170
- Food Acreage......518
  - and Blood......332
  - Before Sleep......480
  - Chewing......325
  - Disinfecting......371
  - Preservation......122
  - Composition of......458
- Football Casualties......578
- Foot Warmers......215
- France, Athletics in......547
- France, Infant Mortality......322
- Freaks, Manufacture of......606
- Fruit, Use of......377
- Fumigation Precaution......274
- Funeral Reform......324
- Funerals, Cruelty of......110

G.

- Garbage Cremation......38, 153
  - Disposal......235
  - Removal...... 46
  - Utilization......339
- Gaslight, Constituents of......585
- German Army, Drinking in......206
  - Swimming Exercises.... 52
  - System of Physical Education..252
- Germ Carriers......270
  - Destruction......339
- Germicides, Relative Value of......675
- Germs Carried by Earthworms......541
- Girls, Hygiene of......274
- Giving Up a Brutal Custom......217
- Gladstone......509
- Gluttony......460
- Glycerine for Burns......489
- Gold, Overdose of......330
- Good Samaritan Danger of......488
- Gout and Sugar......323
- Government Inspection of Meats......353
- Grain and Song......604
- Graveyards and Health...... 55
- Graveyard Soils......272
- Gray Crosby, Pittsburg Sanitation......403
- Groff, G. G., Suggestions for Winter....516
- Gronwold, Chr., Leprosy in Minnesota...594
- Growing Pains......244
- Gymnastics, Correct......615
- Gymnastics in Schools......586

H.

- Hair in Stomach......271
- Hairs to Hide......326
- Hall Ventilation......665
- Hamburg Water......676
- Hamilton, Hugh, Is Cholera Early Recognizable?......653
- Handwriting and Hygiene......280
- Hard Condition......323
- Harem, What They Eat in......492
- Hartridge, G., Electric Light and the Eyes......584
- Hay Fever......172
- Health Boards and Consumption......138
  - and Bear Hunting......620
  - City of......16, 75

Health How to Preserve................369
  Letters on 366, 426, 485, 542, 599, 662
  Officers' Work and Pay..........465
  Orders to Undertakers...........488
  Secrets..........................645
  Spendthrift Tendency...........380
  and Salt.........................563
  of War Survivors................. 69
  What is Meant..................367
Healthfulness of Chicago...............437
Healthy Drunk.........................612
  Home Requisites..............550
  Persons, are any?..............367
Heated Walls, Ventilation by 669
Heating Home 377
Heights 679
  and Weight 218
Helwan, Baths of.......................674
Hemerobaptistæ 41, 663
Hereditary Influence.....................374
Heredity 610
He Wants His Body Back 119
Hewitt, C. N., Measles..................658
High Buildings..........................120
Hindu Vaccination......................605
Hints to the Milk Trade................475
History of Cremation in England 568
Holmes, O. W. 511
Honeymoon Wax and Wane............322
Hood, Mrs. E. N., the Lunch Basket....483
Horseback Riding 71
Horse, Donkey and Mule Meat 323
Hospitals for Contagion................310
Hot Baths *vs.* Rheumatism..............671
Hotbeds of Disease...... ....31, 41, 83
Hotels and Pure Milk..................172
Hot Weather Deadly........... 489
  Diet......................457
  Hints.....................434
Housework 607
Human Mortality.......................327
Humor of Sanitation................ ..561
Hunger-bread and Typhus..............437
Hunting Health and Bears..............620
Hurry and Worry Kill Men.............170
Hydrogen Peroxide as a Disinfectant of Water 676
Hygeia, a City of Health.............16, 75
Hygiene Among the Aborigines.........449
  Department in the University..173
  For Children.....................312
  For Obesity...................171
  In the Barber Shop............277
  In the German Army..........272
  And Handwriting.............280
Hygiene of the Mouth 637
  Patti's 606
  People are for..................500
  Railway.......................358
  Of Sweating System...........555
    The Teeth.................609
    Young Girls...............274
      Women 157
  What is it?....................366
Hygienic Characteristics of Old Graveyard Soils 272
Hypnotism in Belgium..................218
Hysteria in the Nursery 161

I.

Ice Cream.............................126
  Good use for...... 607
Ideal family Physician 609
Ignorance and Disease..................602
Imprinting of the Foot or Hand.........324
Impulse 268
Indelible Ink, to Remove............... 50
Indian Civilization.. 613
Infant Feeding in France.....................375
  Food, Temporary........ 499
  Mortality in France..................... 322
Infection by Telephone.................... 372
  And Rubber Coats.............. ...554
  New Plan to Prevent..........675
  and Paper Money 677
Infectious Dead...................................551
  Hospitals and Religion...........606
Infectiousness, Periods of.......... ...378, 672
Ingrowing Toenails.............................550
Influence of Weather on Disease...... 62, 131
Influenza and Birth-rate...... 276
  Stamps 327
  Through the Air............ 605
Inoculation of Flavor................. 276
  of Scarlet Fever 279
Insanity and Surroundings.............. 66
Insomnia, Warm Water in.............. 43
Instructors in Physical Culture..........664
International Congress of Hygiene...... 63
  Health Association........495
  Temperance Congress......434
Isolation................................429
  and Diphtheria 548

J.

Japan Compulsory Vaccination in.......373
Japanese Cleanliness.....................328
  Grimacers.......................498
Japan, Old Folks in......................372
Jews and Tuberculosis................... 46

Jewish Meat ... 169
Jones, S. S., Difficulties to Overcome ... 298

K.

Keating, J. M., Sanitary Horseback Riding ... 71
Keeping the Plumbing Sweet ... 592
Keeping Well, Recipes for ... 487
Kelso, W. W., Hints to the Milk Trade ... 475
Kidneys, Bright's Disease of ... 21

L.

La Grippe, After ... 115
    in Ancient Greece ... 374
Laziness Enforced ... 207
Leaders of 1920 ... 278
Lead Poisoning, Curious Case ... 376
    Prevention of ... 43
Leather Workers Risks ... 222
Lee, B., Sanitary Beneficence of American Institutions ... 149
Lee, W. R., Siam from a Sanitary Point ... 143
Le Fevre E., Health Boards and Consumption ... 138
Leper Colony ... 120
Leprosy and Fish Diet ... 365
    in Minnesota ... 594
    in Spain ... 573
    to Prevent ... 502
Lesson of Religious Communities ... 115
Lesseps ... 511
Letters on Health 366, 426, 485, 542, 599, 662
Leuf, A. H. P., "Typical" Man ... 641
Lewis Dio, a Consumptive Romance, ... 73
Life and Occupations ... 50
    Value of ... 289
Lindsley, C. A., Contagion Hospitals ... 210
Lithæmia ... 23
Liver Abscesses ... 21
    Amyloid ... 21
    Cancer of ... 20
    Sclerosis of ... 20
Local Boards ... 178
Locke, H. M., a Physiological Sewerage System ... 9
Lodgers in a Crowded Temement ... 87
London New Health Department ... 167
Longevity ... 614
    Examples ... 57
Low Neck Dresses ... 168
Lunch Basket ... 483
Lungs, Consumption of ... 25

M.

Malaria and Negroes ... 376
    in Ancient Greece ... 438
    Prophylaxis ... 378
Man Afraid of the air ... 165
    Natural Duration of Life ... 614
Man's Relative Height and Weight ... 218
Marriage and Medical Examinations ... 435
    in Brazil ... 324
Maxwell, G. T., Chemistry Incompetent to Determine Purity of Water ... 539
Measles ... 658
    New Cause of ... 488
Meat Examination ... 349
    Jewish ... 169
Medical Science Present and Future ... 92
Medicine, Rational ... 210
Melons, Bacteria of ... 378
Merz, C. H., A Possible Source of Disease ... 201
Michigan State Board ... 336, 504
Microbes Killed by Milk ... 47
Military Step and Brain Jar ... 172
Milk and Microbes ... 47
    and Scarlet Fever ... 604
    Pure, in Hotels ... 172
    Salt in ... 548
    Sterilized ... 122
    Supply, New Feature in ... 118
    Teeth ... 591
    Trade, Hints to ... 475
    and Typhoid Fever ... 53, 56, 393
    Woman of Carlsbad ... 456
Minnesota, Leprosy in ... 594
Minor, J. C., Position in Sleep ... 481
Minutes of 21st Meeting, May 13 ... 441
    of Special Meeting, March 28, of State Board ... 381, 680
Model to Imitate ... 432
Montgomery, J. H., Quarantine and Diphtheria ... 301
Moore, A. J., Where the Shoe Pinches ... 524
Morbid Viennese Custom ... 37
Morse, W. F., Waste and Garbage ... 235
Mortality in England and France ... 376
    and Occupation ... 132
    of War ... 439
Mosque de la Place du Gouvernement ... 665
Mossman, B. E., Enforcement of Sanitary Rules ... 362
Motter, M. G., Trichinosis ... 349
Mountain Towns, Water Supply ... 1
Mouth, Care of ... 126
    Hygiene ... 637
Music as a Therapeutic ... 51

N.

Naphtha a Germicide ... 339
Necessity for a National Bacteriological Institute ... 597

Neglected Points in Railroad Sanitation. 27
Negroes and Malaria. 376
New Hebrides, Arrow Poison in....609
New Hospital Feature to Prevent Infection....675
Neuralgia and Tight Shoes.... 44
New York Board of Health....489
  and St. Paul.... 501
Night Air....674
Night in the Slums of New York....31, 83
Nightsoil Cremation 153
Nose not in Centre of Face....325
Notification of Contagion.... 162
Nursery, Hysteria in....161
Nursing Babies....251
Nutritive Value of Potatoes....373

O.

Oatmeal Bags for the Bath....674
Obesity....365
  and Hygiene....171
Occupation for Old People....220
Occupations and Life.... 50
Old Folks in Japan....372
Old, Occupation for the....221
Our Sleeping Apartments.... 42
Outing....167
Ovid's Recipe for Wrinkles....372
Oyster Croquettes....169
Oysters and Typhoid.... 46

P.

Pain and Civilization.... 26
Paper Money a Carrier of Infection....677
Paraffin Light, Constituents of....585
Parents' Duty....207
Paris Water Supply and Sewerage....97, 133, 192, 245
Parker, W. T., Hygiene of Women....157
  Railway Hygiene....358
  Hygiene Among the Aborigines....449
  Secrets of Health....645
Parloa Maria Keeping the Plumbing Sweet592
Pasteur Institute in France....379
Patti's Hygiene....606
Paving, Defective, and Consumption....603
Peck, O. W., Management of Cholera Infantum.... 424
Pennsylvania Quarantine Commission....318
Perfect Man....453
Perfumery in Hay Fever....172
Periods of Infectiousness....378, 672
Phagocytosis....320
Photographing the Dead.... 37
Physical Culture....162, 508, 581, 664
  Education....252, 493
  Training....216
Physiological Effects of Exercise....281
  Sewerage System.... 9
Physiology and Prevention of Disease...417
  in Public Schools.... 607
Pietra-Santa de, Dr. Prosper, Subterranean Paris, etc....97, 133, 192, 245
Piles, Relief of....273
Pimples, Application for....322
Pineapples as Diet....274
Pittsburgh Sanitation....403
Placarding for Typhoid....125
Plague in London....169
Platt, C., Chemistry and Purity of Water.579
Platt, G., Sewer System of Erie....410
Playing by Proxy....327
Plea for Public Health in Villages....552
Plumbing, Keeping Sweet....593
Poisoning by Canned Salmon....331
  by Wild Parsnips.... 41
Politics and Sanitation....431
Pope Leo XIII....509
Popular Fallacy....492
Position in Sleep....481
Positions, Correct Gymnastic....615
Possible Source of Disease....201
Postage Stamps and Influenza....327
Potatoes, Variation in Nutritive Value...373
Prisons, Tuberculosis in....219
Privy-vault, How to Control....183
Privies and Wells....101, 113
Prizes of Society of Hygiene....326
Prompt Disinfection....119
Proper Apparel....215
Proprietary and Secret Remedies....605
Public Funeral Danger....427
  Health a Duty.... 477
  Health and Grave-yards.... 55
  Health Secretary....111, 162, 282
  Sanitary Aid Indispensable....562
Pure Water *vs.* Cholera....669
Purification of Water....608
Purifying Water....673

Q.

Quarantine Commission of Pennsylvania....181, 318
  of Scarlet Fever....306
Queer Burial Customs....589
Quick Lunch Evils.... 44

R.

Railroad Bridges in United States.... 56

CONTENTS OF VOLUME VII.

Railroad Cars and Consumption........593
  Sanitation, Neglected Points in 27
Railway Car Ventilation................129
  Hygiene..................358, 471
Rain Bath............................332
Rational Medicine......................200
Recipes for Keeping Well..............487
Reed R. Harvey, How Can we Control the Privy Vault?......................183
  Hunting Health and Bears..............................620
Regulation of Hypnotism in Belgium....218
Relative Value of Germicides...........675
Religion and Infectious Hospitals......606
  Sanitation....................679
Religious Communities, Lesson of.......115
Rest and Travel as Therapeutics.........278
Re-vaccination.........................374
Rheumatic, Barometer for............ 45
Rheumatism *vs.* Hot Baths.............671
Rice, J. M., Physiology and Prevention of Disease..........................421
Richardson, B. Ward, A City of Health 16, 75
Riis, J. A., The Riverside Hospital......417
River Purification......................124
Riverside Hospital.....................417
Roads, Good...........................271
Roller Skating......................... 54
Rosebrugh, A. M., Ventilating Appliance 470
Rubber Coats and Disease...............554
  Foot Fever.....................110
  Sore Mouth....................127
Rubeola...............................658
Ruined by Whiskey....................119
Running for the Cars, Death by.........579
Russian Congress of Hygiene............672
Rust, to Remove from Iron.............167

S.

Sacramental Cup.......................532
Salmon, Canned, Poisoning by.........331
Salt and Health........................553
  in Milk............................548
Sanitary Advantage of Good Government 435
  Beneficence of American Institutions........................149
  Day......................504, 655
  Eat..........................433
  Exhibit at World's Fair........164
  Horseback Riding............. 71
  Rules, Enforcement............362
  School-room..................316
  Utopia........................208
Sanitarian, Dignity of..................548
Sanitation, Economic Value of..........287
Sanitation, Humor of...................561
  Not Quarantine.............549
  of Cemeteries...............493
  of Pittsburgh................403
  and Politics..................431
  and Religion.................689
Saratoga, What to Do at................494
Scarlet Fever Flag....................501
  Inoculation.................279
  and Milk....................604
  Quarantine.................306
School Children, Teeth of..............678
School Girl's Lunch Basket............483
  Hygiene........................ 64
Schoolroom, Sanitary..................317
Science in Bread Making............... 48
Scientist's Ruling Passion..............168
Sclerosis of Liver...................... 20
Seashore and Consumption............113
Sea Voyage, When Appropriate.........118
Secretary of Public Health.....111, 162, 282
Second-hand Clothing.................433
Secrets of Health......................645
Self-purification of Rivers..............124
Seven Cent Lodging House............. 16
Sewage Disposal.......................125
  in Germany............ 55
  Experiments at Frankfort....... 59
  Purification.....................178
Sewerage System, A Physiological....... 9
Sewer and Drain Pipe, Improved........ 48
Sewers of Paris...............97, 133, 192, 245
Sewer System of Erie..................410
Shelley, Cremation of..................604
Ships, Ventilation of...................484
Shoes, Burial...........................538
  Where it Pinches................524
Siam and Sanitation....................143
Siamese, Group of......................144
Siam, King of..........................145
  Queen of.......................147
Simonin, I. M., Utilization of Garbage, etc.................................339
Skirts, Long..........................325
Sleep, Food Before.....................480
  Plenty..........................119
  Position in......................481
Slum Population, Increase..............322
Small Change as Germ Carriers.........270
Smallpox, How Carried.................427
  at Johnsonburg..............178
  vs. Vaccination.............409
  Warnings....................333
Smith, H. R., Neglected Points in Railroad Sanitation.................... 27

- Snow Carries Disease....428
- Soap a Medicine....669
- Solomon and his Liver....111
- Spittoon for Consumptives....453
- Spitting, Stop....380
- Spring Water....331
- Stammering....275
- Stecher, W. A., German System of Physical Education....252
- Sterility and Fat....171
- Sterilization of Infectious Dead....551
- Stewart, E., Relation of Privies to Wells. 101
- Stomach, Cancer of.... 23
  - Care of.... 45
  - Hair in....271
- Strong, How to Get.... 67
- Subterranean Paris.... 97, 133, 192, 245
- Suburban Life and Progress....638
- Sullivan, John L....515
- Sulphured Almonds....435
- Sunday Funerals.... 45
- Sunlight, Constituents of....585
- Sunset in the United States.... 19
- Sutton, E. M., Prevention of Contagion in Consumption.... 205
- Sweating Hands....167
  - System, Hygiene of....555

T.

- Table Habits of the Sultan....434
- Taylor, J. M., Exercise for Childhood and Youth....461
  - L. H., Typhoid Fever and Impure Milk....393
- Tea Drinking....673
- Teeth, Artificial....272
  - Care of....204
  - Hygiene of....609
  - of Children....678
  - of School Children....678
  - Save for Health Sake....661
  - Second-hand....271
  - Use of....612
- Telephone Infection....372
- Temperance Prize Essay....325
- Temperature of Beverages....324
- Tenement Population of New York....120
- Tennyson....509
- Theatres and Consumption....439
- Theological Diagnosis....118
- Thistles as Food....488
- Thomas, J. J., Chest Development *v.* Consumption....423
- Thompson, Sir Henry, Cremation, Modern....526, 568
- Tobacco Effects....491
- Tobacco, Is it Food and Drink?....492
  - *vs.* Consumption....492
- Toe-nail Ingrowing....550
- Tolerance and Custom....666
- Total Abstainers, Vital Statistics....494
- Toothache....592
- Tooth Brushes....271
- Treatment of the Tzar's Consumptive Son....439
- Trichinosis....349
- True Sanitary Reformer....672
- Tuberculosis Conveyed by Bedbugs....675
  - Epidemic....118
  - Immunity of Jews.... 46
  - in Prisons....219
  - Prize for Essay on....670
  - and Worms....541
- Two-cent Restaurant.... 88
- Typhoid Fever....182, 535
  - Aerial Transmission of....502
  - a Rural Disease?....345
  - Loss by....291
  - Lying Dormant....578
  - and Milk....53, 56, 393
  - and Oysters.... 46
  - Fever, Placarding for....125
  - Prevention....102
- Typhus Fever in Britain....435
  - and Hunger Bread....437
  - and Famine in Russia....503
- Typical Bum.... 32
- Typical Man....641

U.

- Unchaste Man....489
- Undertakers, Health Orders to....488
- Undertaking as a Nuisance....220
- Unhappiness, Source of....222
- University, Hygiene Department in....173
- Upholstery and Disease....551
- Urns, Cinerary....577
- Use of Flesh of Poisoned Animals....501
- Utilization of Garbage, etc.....339

V.

- Vaccination, Ancient Hindu....605
  - Compulsory in Turkey....489
  - Efficiency of.... 43
  - in Italy....376
  - in Japan....376
- Vaccine and Carrier Pigeons....549
- Van Derwerken A., The Sacramental Cup.532
- Variety the Spice of Life....598
- Vegetable Butter....550
- Vegetarian *vs.* Meat-eater....372

- Ventilating Appliance 470
- Ventilation and Columbus..........436
  - by Heated Walls..........669
  - of Churches and Halls 665
  - of Holds of Ships..........484
  - of Railway Cars 128
- Vichy Imitations 437
- Vigor, Preserve..........374
- Village of Congenital Criminals..........669
- Villages, Public Health in..........552
- Vital Statistics of New York..........218

W.

- Wakefulness..........490
- Walking 583
  - Cardinal Gibbons on..........163
- Wall Papers, Arsenical..........495
- Warm Water in Insomnia 43
- War Cremation in..........671
- War Mortality..........439
- War Survivors, Health of.......... 69
- Warts, to Remove.......... 66
- Waste, Disposal of..........235
- Water Cures 454
  - and Chemistry..........539
  - Disinfectant..........676
  - Hamburg..........676
  - Pure, on Shipboard 168
  - Purification..........608
  - Purifying..........673
  - Purity and Chemistry 579
  - Hemlock Poisoning.......... 41
  - for the King 329
- Water Supplies..........133
  - Supplies, Protection 177
  - Supply of Erie 265
    - in Mountain Towns 1
    - and Sewerage of Paris, 97, 133, 192, 245
  - the Best Drink 604
- Weather and Disease..........131
  - Influence 62
- Well and Privies 101, 113
- Well, The, What does it Drain? 479
- Wet Shoes, Drying 272
- Whales as Food..........670
- Where the Shoe Pinches 524
  - Salubrity is Not..........671
- Whitewash, Disinfection with 329
- Whittier, F. H., Gymnastics in Schools..586
- Wild Parsnip, Poisoning.......... 41
- Williams, G. W., Care of the Teeth..........204
  - Save Your Teeth for Health Sake..........661
- Wind in the Bowels.......... 40
- Window Frame, Improved..........132
- Winter Suggestions..........516
- Women, How They Should Live.......... 60
- Word to Directors of Physical Culture...664
- Work and Pay of Health Officers 465
- Worshiping the Bottles 121
- Wrinkles..........372

Y.

- Yellow Fever and Revolutions..........373
- Young Women, Hygiene of 157

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COMMUNICATIONS.

Water Supply in Mountain Towns,*

WITH SPECIAL REFERENCE TO ALTOONA WATER SUPPLY.

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THE water supply of mountain towns presents some problems of rather peculiar interest. The question of quantity is, of course, the first and most prominent one, and, situated as mountain towns are, near the sources of streams, the question of quantity assumes an importance that is not at all felt in places farther away from head-waters. Where a stream flowing constantly one hundred or one thousand times more water than the daily needs of the people passes a city or town, the main questions to be considered are those of quality, and means of getting the water distributed for daily use; but in mountain towns this is obviously not the case. Mountain streams are, of course, necessarily small, unless some peculiar configuration of the country should contribute to make them large; and, furthermore, the fall is usually very rapid, so that the rain soon runs away. These sources of supply also are affected by floods and drouth very much more than the supply of towns situated farther away from the mountain ranges. In addition to these difficulties it seems to be true, especially in Pennsylvania, that towns situated near the mountains have special difficulties in regard to the purity of water supply. It is the object of this paper to discuss a few of these difficulties which are characteristic of the water supply of mountain towns, and especially to refer to the characteristics of the Altoona water supply.

Of course every town has its own local conditions, and it is entirely possible that much that applies to Altoona might not apply to any other single town. We shall, however, perhaps best bring out the points which we have in mind by confining our discussion largely to the state of affairs at Altoona, allowing other towns situated near head-waters to apply as much or as little as suits their own circumstances. First, therefore, in regard to supply.

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* Read before the State Sanitary Convention at Altoona.

The amount of water required per person per day, is, of course, variable, and there is no positive figure applicable to all situations. In what follows we have assumed sixty-five gallons per day per person required. Based on this figure, the present consumption of Altoona is a little over 2,250,000 gallons per day, the population being 35,000. Allowing for natural growth of the population, in ten or fifteen years Altoona will require 3,250,000 gallons per day. Where, then, shall this water come from?

It is a very easy matter to furnish water enough during certain portions of the year. The average rainfall at Altoona, for the past five or six years, has been about thirty-two inches, and this is fairly well distributed throughout the year, so that, if it were not for the evaporation and occasional dry periods or drouths, it seems fairly probable that the flow of streams in average years might furnish sufficient supply. Unfortunately, however, three or four months in the year are frequently dry, the rainfall being diminished in amount, and the evaporation very great. When this happens the flow of streams becomes entirely inadequate. Careful measurements of the four most available sources of water supply, which could be used without pumping, show that in 1887, when a drouth of some two or three months' continuance visited this region, the total flow of these streams was as follows:

Homer's Gap, ...	238,000	gallons	per day.
Blair Creek, ...	900,000	"	"
Mill Run, ...	490,000	"	"
Kittanning Point, ...	498,000	"	"

This gives a total of 2,126,000 gallons per day. As stated above, the present needs of the city are a little over 2,250,000 gallons per day, and within ten years 3,250,000 gallons will be required. If these figures are to be trusted, and if we must, as seems reasonable, provide for the worst conditions, it is entirely obvious that even though all the possible sources of supply, without pumping, are made use of at Altoona, it is absurd to expect the flow of streams to furnish the amount of water necessary for the city supply during a dry time.

This point being established, it seems clear that some other means than simply the flow of streams by gravity will have to be made use of to supply towns situated as Altoona is with water during dry weather. Two other propositions have been made to meet this difficulty. One is to pump from other available sources of supply, taking the water lower down the streams where they are larger, and the other is to attempt to get a supply from artesian wells. In a paper so brief as this one must necessarily be, it will be impossible to discuss all the points in full, and so it will perhaps be wise to say only that the pumping scheme, while undoubtedly available to help out the other sources of supply, means a large amount of money. So far as we can get reliable information, it seems fairly safe to say that to attempt to supply Altoona with water from running streams would involve the construction of water works at four different places, using gravity for distribution, and a pumping-station at one or two others, so that the total cost of such a scheme would probably be not less than $1,000,000 or $1,250,000.

The artesian-well scheme has excited considerable interest, and one well has already been put down in Altoona to a depth of over 2,000 feet. This well has water in it, but it does not flow. During one dry spell, 25,000 gallons per day were taken from this source of supply by pumping. A careful study of the geology of the region indicates the possibility of a small supply by means of artesian wells, but the uncertainties are so great that it would be a bold man who would be willing to guarantee a sufficient amount of water from artesian wells.

In view of this state of affairs, it is obvious that the only possibility for a mountain town like Altoona is to store water during the rainy season to tide over the dry weather. This method has already been made use of to a limited extent. There are now in existence, near Altoona, three storage reservoirs—one on the city supply, located at Kittanning Point, southwest of the city, about five or six miles from Altoona, which holds about 60,000,000 gallons, or practically about twenty or thirty days' supply, including the flow of streams during dry weather. The other two reservoirs are on the Pennsylvania Railroad supply, and are located in what is known as the "Kettle," east of the city, one containing about 30,000,000 gallons, known as Pottsgrove Reservoir, and the other containing 180,000,000 gallons, known as Brush Mountain Reservoir. Both of these are on the same stream, the larger being situated higher up the stream.

The drainage area for securing water supply on several of the possible sources is abundantly large. This drainage area has not been accurately mapped out for all the sources of supply, but so far as information has been obtained, it shows that the drainage area supplying any one of three or four possible sources is sufficient, so that there would be no difficulty in getting two or three times the amount of stored water that is necessary to tide Altoona over a very dry season. It has been proposed to build an additional storage reservoir on the same stream from which the present city supply is obtained, some mile or two toward the city from Kittanning Point Reservoir; and for this source of supply the drainage area has been pretty carefully studied. The proposed reservoir will hold about 360,000,000 gallons, and this, with the average flow of the stream, will afford about a six months' supply for 50,000 people. The actual available drainage area on this proposed reservoir varies somewhat with its location, but it is somewhere from seven and three-quarters to twelve square miles. This, according to data obtained by Mr. C. W. Knight, of Rome, New York, a hydraulic engineer, who has devoted considerable study to the question of the Altoona water supply, compares very favorably with the drainage area in other regions, which have already been shown to furnish abundant supply for storage. For comparison it is perhaps advantageous to have two or three figures. The New York Bronx River supply stores 215,000,000 gallons per square mile of water shed. At Scranton, a storage is obtained of 300,000,000 gallons per square mile of water shed. The proposed reservoir at Altoona only demands 45,000,000 gallons per square mile of water shed. So far as supply goes, therefore, there seems to be no difficulty in obtaining abundant water, provided proper storage means are made use of; and although it is impossible for us to state this same fact for any other town than Altoona, it would seem as if towns situated not too close to the crest of the mountain might without difficulty secure sufficient drainage area to give them all the water needed.

Thus far we have discussed only supply, and the main points which we have tried to bring forward are: First, that for any sizable town near the summit of a mountain range, which means near the sources of the streams, storage is absolutely essential, in order to tide over dry weather, unless, perchance, an unlimited amount of money is available, and pumping is made use of, or the very remote possibility that artesian wells will furnish what is needed; and second, that unless the town is nearer to the sources of the streams than Altoona is, say four or five miles, it is probable that there will be drainage area sufficient to furnish all the water needed.

The question of the quality of the water now comes forward with a good deal of prominence. It is well known that water stored in reservoirs many times has certain peculiarities, which render it objectionable to use, and there is also the additional difficulty, especially in Pennsylvania, that many of the small streams which are available for water supply to mountain towns are contaminated seriously with mine drainage. This latter difficulty is certainly the case with the Altoona water supply at present, and the former difficulty, in a marked degree, is characteristic of the two reservoirs of the Pennsylvania Railroad Company at Altoona, namely, the Pottsgrove and Brush Mountain Reservoirs. In view of these facts, the question of storing water for mountain towns seems to be clothed with considerable difficuly.

Let us see whether we can get at the facts of the case, and then, if possible, draw some conclusions from them. The Altoona city water supply from Kittanning Point Reservoir is very fair water for nine months of the year, and for two years past, owing to the heavy rainfall, there has only been a week or two during the year when the water was not quite usable. This is true, notwithstanding the fact that the drainage from four or five quite extensive coal mines finds its way into the water, and that the length of time from the admission of the drainage to the water supply until the water reaches the reservoir is so short, and the rocks and strata that the water flows over are of such a nature, that much of the unchanged mine drainage finds its way into the storage reservoir, and from there to the city service. Usually, the mine drainage is so small a proportion of the supply that there is little difficulty. This is not true, however, in dry weather, when the proportion of mine drainage becomes larger. At these times the tea and coffee made from water from this source have an inky taste. It is well known that mine drainage is largely protosulphate of iron, and this combines with the tannic acid of the tea and coffee, forming, as is well known, a species of ink, which clearly accounts for the taste above mentioned.

On the other hand, the water from the Pottsgrove and Brush Mountain Reservoirs, east of the city, is a fairly usable water for eight or nine months of the year, although containing quite considerable amounts of organic matter dissolved in the water. The presence of this organic matter is variously accounted for, some claiming that when the reservoirs were built the bottoms were not quite sufficiently dredged or cleaned. Others state, what is certainly true, that higher up on the stream there is quite an area of swamp, and that this constantly furnishes something to the water. Whatever the source, the fact remains that the water in these two mountain reservoirs has considerable dissolved organic matter in it. However, this would not be, so far as our knowledge goes, so serious an objection, as almost all natural waters have more or less organic matter in them from either animal or vegetable sources, or from both; but, beginning usually about the last of May or first of June, the water from these two reservoirs becomes almost unusable for drinking, due to the presence in the water of some algæ or water-plants. Some study has been given these plants, but they have not been fully identified. The most prominent one is, apparently, of the genus *Spirogyra*. It grows in great luxuriance around the edges of Pottsgrove Reservoir, and, either as the result of its own life-history, or possibly as the result of some animal life making its home in the plants, imparts to the water a very disagreeable taste and odor. The odor is very characteristic, but is difficult to describe. Perhaps the best that can be said is that the water has the odor and taste of corn-silk. It is claimed that this water produces diarrhœa, when used in the ordinary way. Considerable study has been put on a method of overcoming this difficulty, but nothing has yet been found which would anything more than mitigate the trouble. The most successful thing tried was to remove the plant in large masses, by running a pole in it, and twisting it around until a considerable accumulation had been obtained, and then drawing it upon the shore and allowing it to dry. The peculiar odor and taste are very persistent, and follow the water even when it is distilled. Nothing has yet been secured which would make this water palatable while the plant is thriving. The trouble affects the reservoir for three or four months.

This difficulty with the odor and taste of stored water is not confined, as is well known, to mountain towns. The peculiar difficulty which we have here we have never met elsewhere, but it is well known that the storage reservoirs of Boston, of New Haven, and of other cities, are frequently affected by some peculiar odor and taste, usually due to some microscopic plant or algæ. The new reservoir recently built at Greensburg, in this State, on a not very large stream, had during last summer quite a serious difficulty due to taste and odor, which taste and odor disappeared when the water furnished the service was taken from near the surface, instead of from near the bottom. Study has not succeeded in locating this difficulty on a plant or algæ. The reservoir being new, it was believed that the odor and taste came from the stagnant water lying near the bottom of the reservoir, in contact with the soil.

In view of the difficulties mentioned above, the problem of securing good water for mountain towns does not seem to be easy of solution. Storage is an essential in order to tide over the dry weather; and stored water, either that obtained by collecting the water from apparently pure mountain streams, or that obtained from the same kind of streams contaminated with mine drainage, is in neither case free from objection.

Considerable study has been devoted to both these kinds of water in the laboratory of the Pennsylvania Railroad Company, at Altoona. The water contaminated with the mine drainage from the city supply has been frequently examined; also the waters from the Pottsgrove and Brush Mountain Reservoirs, which are not in the slightest degree contaminated with mine drainage, have been frequently examined. Some two or three years ago, during quite a dry spell, careful chemical analyses and some bacterial study were made, in the Laboratory of the Pennsylvania Railroad Company, of the waters from both these sources of supply. As previously hinted at, the waters from the Pottsgrove and Brush Mountain Reservoirs were found to be quite high in organic matter. The free and albuminoid ammonia showed quite high figures, and, apparently, the organic matter was largely vegetable, and this is what we would expect from the examination of the sources of the water, since there is very little human habitation or animal life around these two reservoirs. On the other hand, to our astonishment, the water from the city water supply at Kittanning Point, examined at the same time, showed very small amounts of organic matter. The free and albuminoid ammonia, and the nitrogen as nitrates and as nitrites, were all low. This was the more astonishing since it is well known that on the sources of both the Glen White stream and Baker's Run, which furnish the water for the city supply, there are considerable settlements of miners and their families. Personal examination, made at different times by the Altoona Board of Health, has shown that the drainage, not only from stables, but also from water-closets, as well as house drainage, is constantly finding its way into these streams.

But the chemical examination of these two waters does not tell the whole story. The bacteriological examination was found still more interesting. Careful examinations made, following the Koch method of counting the families on glass plates, showed that the water from the Brush Mountain and the Pottsgrove Reservoirs had from 300 to 500 families of bacteria per cubic centimeter, while samples taken at almost the same time from the Altoona city water supply, and known to be contaminated as above mentioned with house and stable drainage, if not worse, showed in some cases two, and in no case over five, families per cubic centimeter. These facts seem very remarkable to us, and have led to considerable speculation as to the reasons why. There is still another fact, in addition to what has been stated, showing the difference between these two sources of supply, namely, although the Pottsgrove and Brush Mountain Reservoirs are in an air line not more than perhaps five or six miles from the Kittanning Point Reservoir, and although the Pottsgrove and Brush Mountain Reservoirs are filled with algæ, and the odor and taste very objectionable, as above stated, yet thus far we have not succeeded in finding any of the same kind of algæ in the city water supply at Kittanning Point.

These three facts—namely, no objectionable odor and taste, due to plants or algæ, less bacteria per cubic centimeter, and less organic matter in the water, although the sources are known to be more contaminated, all of which are characteristic of one of two sources of supply not over five or six miles apart—seem to us very impressive and worthy of more than a moment's consideration. It is, perhaps, impossible, in the present state of our knowledge, to do anything more than to give indications, and we would not like to be regarded as saying that we have completely solved the problem, and know exactly why the facts are as they are. To our minds, however, the state of affairs is very suggestive. Apparently the reason why the city water supply at Kittanning Point is not as objectionable, in any one of the three items mentioned above, as the waters from the Brush Mountain and Pottsgrove Reservoirs, is because the city supply contains mine drainage. So far as our knowledge now goes, this is the principal known difference between the two. The strata do not very greatly differ, although it is fair to say that they are not of the same geological horizon.

This supposition, viz., that mine drainage is, in a certain sense, valuable in a water supply, seems to us sufficiently plausible to warrant us in spending a moment or two with it.

It is well known that within the last five years our knowledge of the influence of iron, in diminishing the amount of organic matter in water, has very largely increased. The well-known Anderson method for the purification of water containing organic matter in solution, and the Webster electrical method for the treatment of sewage, are instances of this increase in knowledge. Apparently hydrated oxide of iron, however obtained, when mixed with water containing organic matter in solution, coagulates and precipitates the organic matter. This seems to be the explanation of the Anderson method of water purification, and also, to a greater or less extent, the explanation of the Webster electrical method of treating sewage. If this be true, it seems to furnish a clew to the peculiarity in regard to the Altoona water supply before noted. As already stated, mine drainage, as it comes from the mines, is largely protosulphate of iron. It is well known by every chemist that, when protosulphate of iron in water solution is exposed to the sun and air, decomposition takes place, resulting in the separation, as hydrated oxide, of a portion of the iron present, and the change of the rest of the iron from the protosulphate to what is known as the sesquisulphate. This separated hydrated oxide, as is well known by those who have traveled through the coal regions at all, sinks to the bottoms of the streams, adhering to the stones and soil, and giving them a yellowish appearance. It is commonly known among the country people as sulphur, but, as above explained, it is in reality hydrated oxide of iron, and, if the deposit is sufficiently large and long-continued, would result in what is known as "bog iron ore." If this chemistry is correct, we have here, it seems to me, all the conditions for the self purification of water contaminated with organic matter, namely, hydrated oxide of iron, separating as the water tumbles over the stones more or less, and in contact, so to speak, with the contaminated water. This view receives strength from some analyses made last summer during the low water of the Kittanning Point water supply. Some samples of water were obtained which were cloudy from separated oxide of iron. An analysis was made of the water, without any attempt at sedimentation or filtration—just as it was obtained. Then some of the same sample was filtered, and the separated oxide of iron carefully examined, when it was found that more than three-quarters of all the organic matter which the first examination had revealed were in the separated oxide of iron. It, therefore, almost seems as if the mine drainage in the Kittanning Point water supply was the real explanation of the freedom from organic matter, the small number of bacteria, and the fact that this reservoir is not the home of objectionable algæ or plants imparting an objectionable odor and taste to the water. It is, perhaps, too soon to positively assert this, and further studies on the subject are, of course, greatly to be desired, but the indications seem so strong that we cannot forbear bringing them forward and urging their consideration.

If the explanation which we have suggested is the correct one, it is clearly evident that mine drainage is not the objectionable element in water supplies that it has previously been supposed to be. In reality it seems as if it was one of nature's methods of the self-purification of streams.

Unfortunately, however, as already stated, the distance that the water flows in the case of the Altoona water supply, after receiving the mine drainage, before it becomes stored in the reservoir, and, indeed, before it finds its way into the service pipes, is so short that quite a portion of the unchanged mine drainage, as well as probably nearly all of the iron above referred to, in the sesquisalt form, remains in the water, and this is certainly objectionable. The query remains whether it is possible by any means, on the large scale, to remove this sesquisulphate of iron, and also any unchanged mine drainage, before it gets into the service pipes. Upon this point two suggestions have been made. Engineer Knight, before referred to, suggests that the storage of the water supply for Altoona, in the proposed new reservoir, be collected during the seven or eight months of the year when the flow is large and when the mine drainage is a very insignificant element, and that during the dry weather, when the flow is small and the mine drainage proportionately large, the water be diverted around the reservoir and allowed to run to waste, the service being maintained from the storage. This, of course, is a very reasonable method of treating the problem, with the unfortunate necessary condition that whatever the flow of the stream is during the two or three months of dry weather is lost, and this might, under certain conditions, be a serious element. In view of this state of affairs, careful experiments were made in the laboratory of the Pennsylvania Railroad Company, which showed that if water contaminated with mine drainage is allowed to flow over broken limestone, or put in contact in any way with limestone, the iron separates in the form of hydrated oxide, being replaced by lime, with the result of leaving an amount of sulphate of lime in the water equivalent to the sulphate of iron previously there. This seems to indicate a very simple method of removing the mine drainage, and at the same time helping the self-purification above referred to, namely, supply the stream, during its two or three miles of flow before it reaches the reservoir, with broken limestone or ballast, and allow the water to flow over it. More or less reaction takes place, resulting in the separation of the hydrated oxide of iron, as before described, and the separation of this, along with the coagulated filth. If sufficient time elapses, and the contact with the limestone is sufficiently long, both of the ends desired, viz., removal of the mine drainage and separation of the filth, would apparently be accomplished, and the water which reaches the reservoir would practically be free from organic matter in solution, and also would be free from mine drainage. It would only be necessary for it to stand in the reservoir long enough for the coagulated filth and oxide of iron to settle to the bottom, and then proper precautions be taken, in drawing off the water, not to disturb the layer on the bottom, in order to furnish to the service a water probably as pure as most of the public water supplies of the country. It is, of course, fair to say that the proposed method would result in increasing the hardness of the water. Just how serious a matter this would be, it is not possible to state at the present moment, but the analyses already made show that it is probable that the total sulphate of lime in the water would not exceed five to eight grains per gallon, which, as is well known, is a small amount. Many public water supplies have more.

The effect of limestone on water contaminated with mine drainage is claimed to be the reason why Philadelphia does not suffer very badly from the sewage of the towns on the Schuylkill River, higher up the stream. I have seen it stated that between Reading and Philadelphia the water flows over a strata of limestone, when the reaction above described unquestionably takes place, resulting in the self-purification of the Schuylkill River water. Whether this be true or not, it is certain that limestone in contact with water containing sulphate of iron throws out the iron in the manner above described.

One point further: as the country fills up with inhabitants, the difficulty of obtaining pure water supplies for towns and cities, be they either mountain towns or situated along the banks of streams, will unquestionably increase, and it looks as if our hope for the future years' water supply rests not so much in costly ways of securing a supply of pure water, and then devoting great effort to keeping this supply pure, as it does in taking the most available source of water supply, and rendering it wholesome by proper treatment. If the explanations and discussion given above are approximately correct, those cities which have mines situated on their sources of water supply have exceptional facilities for rendering their water supply fairly wholesome, by simply making use of the knowledge already accumulated, and the means which nature and commercial operations have put in their hands.

A Physiological Sewerage System.

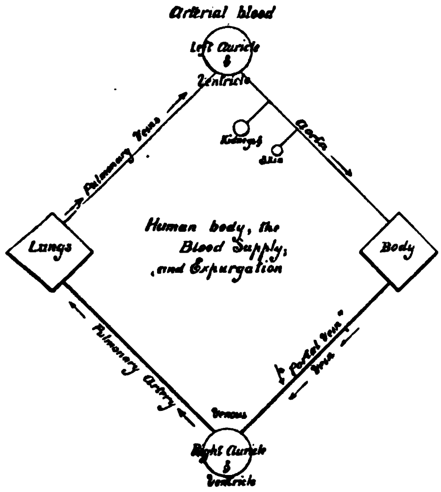
BY HORACE M. LOCKE, M.D.,
President of the Board of Health of Brockton, Mass.

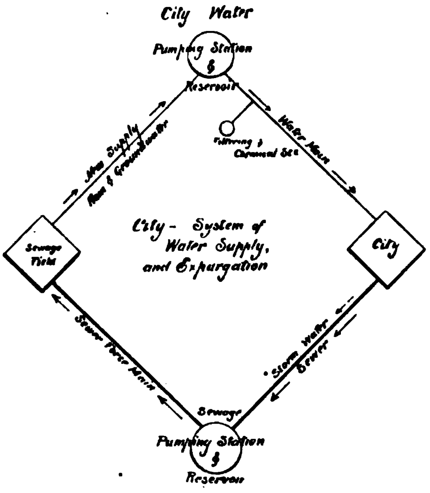
I WILL endeavor to show that a system of "broad irrigation," which is already successfully practiced, is analogous to the purification of our bodies, and that with but slight modifications we would do well to pattern after this process. It carries with it a warning against further delay. We, each and every one of us, have within ourselves a complete physiological "sewerage system" and "water service." Our body is comparable to a city having within it manufactories and various industries, being supplied by "water"—the essential of all life and purity. At the head of the water supply is a "reservoir and pumping station" which provides liberally water for domestic and all purposes. Having been used, it is conducted by "pipes" into "sewers" which grow larger and larger as they join one another and are intersected by "drains" (combined system of "sewers") emptying into a "reservoir" at the "sewage pumping station." Here a "pump" sends the sewage through a "force main" to the "sewage field," where it is distributed broadcast. The air circulates freely over it, removing carbonic acid, odors and watery vapors, and purifying it to a considerable extent. It percolates through the loose loam to "under-drains," all of which, so far, are common and existing realities elsewhere. These subsoil drains are connected and grow larger as they advance and empty, we'll presume, by four mains into the water shed and to the reservoir of our city's supply. The water in percolating through the ground becomes "hard" from the addition of mineral salts, which, with an occasional oversupply by rain, necessitates, we will imagine, a "filtering and chemical station," which station, for convenience, we will supply from a pipe that intersects the "water main." Also we will provide our system with a "second by-station" constructed on a different plan to assist the "filtering and chemical station" should it be disabled.

This system of sewage disposal and water service is paralleled in the human body—the veins of the body and arteries of the lungs are the "sewers," and the arteries of the body and veins of the lungs are the "water-mains." The arterial blood is the vital fluid, "water." Venous or impure blood contains the sewage. The body is a "city," with "industries and manufactories"—the muscles and glands. The "reservoir and pumping station" is the left heart which pumps the blood ("water") through the aorta (the "water-main") to the body (the "city"). Having been used it enters venous capillaries ("pipes") which empty into veins ("sewers"), these growing larger and larger as they join one another, and, being intersected by the portal vein ("drain" receiving "storm-water") and lymphatics ("ground water," constituting the "combined sewers"), empty into the right auricle ("reservoir of sewage").

The right ventricle ("sewage pumping station") next pumps the blood through the pulmonary artery ("force main") into the lungs ("broad irrigation" and "downward filtration fields"). In the lungs blood comes in contact with air, absorbs oxygen, gives off carbonic acid and volatile animal vapors, purifying it almost wholly. The blood is absorbed by venous capillaries ("subsoil or under-drains") which unite, enlarge and empty by four veins ("water ditches") into the left auricle ("reservoir of city's water supply"). The further purification of the blood and removal of excess of water ("storm-water") is done at the kidneys (unique "filtering and chemical precipitation stations"). The kidneys receive blood from the abdominal aorta ("water-main"). The skin also removes excess of water, etc., and constitutes our "second by-station." A certain amount of the blood ("hard water") containing as it does urates and salts ("mineral salts") caused by the previously mentioned lymph ("ground water") is *treated* ("chemical precipitation," so to speak) in the kidneys; but not all of the blood is so treated. The water supply of a city is replenished by rain—of the body by drink.

Illustrated diagramatically:





There is no other complete system of sewage disposal in our body. There is, however, a sewer on the "single-system" plan—the uro-genital tract. The excretions and filtrations from the kidneys are collected and conducted by the ureters (the "sewers") to the bladder ("sewage reservoir") which is emptied occasionally through the sphincter ("flood-gates" as it were) "to the sea."

Information from the Records of the Altoona (Pa.) Board of Health.*

BY C. H. CLOSSON, M.D.,
Secretary of the Board.

I THINK we all agree that while the work of sanitary bodies is not always accredited with that importance to which it is justly entitled, yet the good resulting from this work, when properly performed, cannot be estimated by a monetary value; for what is of greater importance than the protection afforded by good sanitary surroundings? and this can only be secured by a proper observance of sanitary laws, and it is only as these laws are properly applied that immunity is secured from the many hidden dangers which lurk on every hand.

While not in the majority, yet there are many who look upon the efforts put forth for their protection by sanitary bodies as unnecessary, and in a measure as meddling with their individual rights, they preferring to move along with their antiquated ideas of their duty toward the preservation of their health and that of their fellow-creatures, as if man were only placed here to make his body a convenient receptacle for all the poisons and disease germs that are caused by failure to obey the laws of nature and sanitary science. As a result of pursuing such course, a great many lives are lost each year, sacrificed, as it were, to misconception of duty and want of enforcement of proper sanitary laws; for the time has long since passed for attributing disease and death to an angry Deity or to some special fatality.

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* Read before the State Sanitary Convention at Altoona, Pa.

With the knowledge that in all diseases there is a primary exciting cause, and knowing the uniformity of the predisposing causes of certain diseases, and that they are preventable, leads to the conclusion that could boards of health have entire control over each habitation in the district over which they preside as guardians of the public health, then such diseases as diphtheria, scarlet fever, typhoid fever and smallpox, all of which are classed with the preventable diseases, could be so controlled that they would be found only in isolated cases where the contagion or infection was transmitted from some outside source.

It is possible to have such a condition of sanitary matters as will insure immunity from the ravages of this class of disease; but to accomplish such results it will be necessary to educate the general public to the absolute necessity of strict observance of sanitary laws under all circumstances and under all conditions.

In addition to this, the power and authority of boards of health should be so increased and extended that they could cause to be removed at once anything that might threaten the health of the community, even though it be maintained by the municipality itself; and until boards of health are given authority that will enable them to say to the powers that be, that sanitary laws must be obeyed, it will be a difficult matter to accomplish these results.

After what has been said as to what may be accomplished, we will now give a short *resumé* of the work done by the local board, along with some statistics compiled from the records. But so that you may get a better idea of the work in hand here, it may be well to give a short sketch of the history of this city, otherwise you may be misled in your conclusions, as from the Altoona of to-day you get but a faint idea of what it was a few years ago.

The town was first located in 1850, and a large portion of the original plot was nothing better than a swamp. In fact, all the low land in the city plot is wet and boggy; from this you will get some idea of the foundation upon which the city is built.

In 1854 the town was chartered as a borough with a population of 2,000. In 1868, with a population of 10,000, the old charter was surrendered, and the borough took on the dignity of a city, and had delegated to it power and authority to construct and maintain water works, to build sewers and pave streets; but there was not the slightest move toward securing sanitary protection for the city for quite a while after this, not even the building of a public sewer, as up to this time drainage was only secured by filling up the lots, and a great deal of the filling used was objectionable on account of containing refuse and organic matter.

The city water works were erected in 1871 and enlarged in 1880 to 1884, and now the city has an ample supply of pure, fresh water, and only during long continued summer droughts is the city placed on short supply. This necessarily compels the citizens in certain localities to have recourse to well water, the use of which, in thickly settled districts, is always attended with more or less danger, unless the water is boiled before using.

The present city, with its 35,000 inhabitants, comprising some 7,000 separate and distinct families, and an area within the city limits proper of 14,600 acres, all of which require surface and subsoil drainage, and for this purpose there are now constructed 11.5 miles of public sewers; this still leaves large sections of the city unprovided with sewer facilities, and in these localities the open ditch is made to take the place of sewers, and at times these become a fruitful source of evil.

In past years, and before the organization of the local board, the city was visited by epidemics of typhoid fever, smallpox, diphtheria and scarlet fever, but of these we have no data. City Councils, recognizing the necessity of having some organized body whose duty it should be to look after the sanitary matters of the city, passed the requisite ordinance, and in the spring of 1886 the local board of health was organized. It being but five years since the local board came into existence, it is yet but in its infancy; and for the first two years of this time the data furnished the board, and from which the records were compiled, were both meager and incomplete, thus affecting the general results for those years.

In reckoning the several death rates the calculation is based on the rate per cent. per each 10,000 of population, with a pro rata increase of population.

First, we will take up those of the zymotic class that are common to this locality, and have prevailed here since the organization of the local board, taking first that scourge of childhood—scarlet fever:

In 1886,	with a population of	29,960,	the death rate was	1.3	per each	10,000	inhabitants.
" 1887,	" "	31,220,	" "	1.2	"	10,000	"
" 1888,	" "	32,480,	" "	1.5	"	10,000	"
" 1889,	" "	33,740,	" "	2.7	"	10,000	"
" 1890,	" "	35,000,	" "	1.7	"	10,000	"

The average rate was 1.68 per each 10,000 population per annum.

Taking the average population, the maximum death rate from this cause was one death to every 4,820 persons living. In the year 1890 the death rate was one to every 5,333⅔ persons living. One of the ways in which this disease is frequently spread is by having public funerals, and, as is frequently done, using children for pall-bearers, even in cases where death has been caused by scarlatina in its most malignant form, thus exposing the very class of persons who are most susceptible to infection from the poison of scarlet fever.

Diphtheria is a disease that in some respects is very nearly allied to the former one, not only as regards some of the symptoms, but also as to the conditions which give rise to and propagate the disease.

With the calculation same as in former disease, the death rate from diphtheria in 1886 was 1.3 per 10,000 population; in 1887, 2.2; in 1888, 5.2; in

1889, 9.4; in 1890, 4. Comparing the deaths from this cause with the number of cases of this disease as reported existing in the city, there was in the year 1888 one death to every 2.08 cases; in 1889, one to every 2.77, and in 1890, one to every 4.64. The maximum death rate was one death to every 1,015 of population. The rate for 1890 was one death to every 2,500 population.

The large increase of the death rate for 1889 was due mainly to the following causes: The great flood of that year not only filled a great many cellars with the contents of the sewers, but also in certain portions of the city transferred the contents of the privies into the wells from which the families got their supply of water.

Second, the failure to properly isolate persons and families suffering from this disease, many preferring to run the risk of impregnating others with the disease by keeping the facts concealed, rather than that they be debarred from public society or their children denied admittance to the public schools.

Membranous croup, while it may not properly be classed with the preventable diseases, yet through mistaken identity may lead to the spread of other maladies with analogous symptoms. On this account, and believing it to be for the best interests of the city, the local board had membranous croup added to the list of contagious and infectious diseases.

The death rate from this cause, based on each 10,000 population, gives the following percentage: In 1886, 1.6; in 1887, 2.5; in 1888, 2.7; in 1889, 5.3, and in 1890, 4.5. The average rate per annum was 3.32. The average age of the persons who died from the three diseases named was 7⅓ years.

Of all the diseases of the preventable class, there is none found to exist so generally, and under all circumstances, as typhoid fever. This may be accounted for from the fact that the agencies which most frequently give rise to this disease are common to all sections, and, as a rule, to impure water. Putrefactive organic and fecal matters, improperly cared for, are the sources from which it most frequently takes its origin. It might be thought by some that in a city located among the mountains, with an altitude of 1,140 feet above the sea level, enteric fever would not find a place; but such is not the case, as the following data taken from the local records will show. With the same base of calculation as in former diseases, the death rate from enteric fever is as follows, per each 10,000 of population:

In 1886, 3.7; in 1887, 5.7; in 1888, 4.7; in 1889, 5.3, and in 1890, 3.7. The average rate per annum was 4.6. Taking the average population, the maximum rate was one death out of every 1,735 persons living; and the rate for the year 1890 was one death out of every 2,692 of population. The average age of the persons who died from this cause was 23 years. Taking the number of cases existing in the year 1888, there was one death to every 3.12 cases; in 1889, one death to every 4.44 cases, and in 1890, one out of every 10.6 cases.

While no part of the city was exempt, yet the disease was far more prevalent in the unsewered and those portions where sanitation was most faulty, and where well water was used for all purposes; this water, on being analyzed in several cases, was shown to contain sewage in considerable quantities. There are several things that have aided not only in spreading, but also in increasing the mortality list from this disease. Among these we might call attention to the very careless manner of taking care of the dejecta from typhoid fever patients, it frequently being put into open cesspools without the slightest effort being made toward disinfecting; thus the disease germs are left free to find their way into some water supply, and this disposition of typhoid fever dejecta being made in an open, porous soil with an underlying stratum of clay, and, as is frequently the case, the cesspool is located on the most elevated portion of the lot, and perchance but a few feet from the well from which the supply of water is obtained. The local board has publicly called attention to this very pernicious habit, and to the great necessity of boiling all water used from wells, hoping that by thus educating the public to the danger of such practice to avert any further trouble from this source.

I shall now take up cholera infantum, pneumonia and consumption, and while these diseases may not be so readily affected by sanitation as the zymotic class, yet they are influenced, to a greater or less extent, according to the sanitary surroundings; and they are of especial interest to the local sanitary body, as the highest death rates in this city have been from these three causes. From cholera infantum, the death rate in 1886 was 8.3 per each 10,000 population; in 1887, 10.5; in 1888, 7.4; in 1889, 13.3, and in 1890, 12. Taking the number of births in the city in the year 1889, one out of every 18, and in 1890, one out of every 20 children born died from this cause.

Pneumonia has caused a greater number of deaths than any other one disease in this city. In 1886 the rate per each 10,000 population was 7.3; in 1887, 11.5; in 1888, 13.2; in 1889, 14.5; and in 1890, 14.3. The deaths from this cause were not confined to any locality, or to any particular class, sect or age; and the prevalence of this disease can only be accounted for by the severe and sudden atmospheric changes to which our climate is subject.

Consumption. The death rate, being based on each 10,000 of population, in 1886 was 7; in 1887, 13.7; in 1888, 14.1; in 1889, 14.5; and in 1890, 12. The average rate from this cause was 12.26. The percentage of deaths from consumption to the total mortality for 1890 was 7.23. The average from this cause in 1888 was one death to every 760 persons living; in 1889, one to every 688½, and in 1890, one to every 833⅓.

In summing up the location and circumstances under which a large majority of the deaths took place from the diseases named, we find it was in localities where there are no sewers, and in houses where the atmosphere was unwholesome on account of defective soil pipes and wet, filthy cellars, and where impure well water was used; thus the health of the inmates was vitiated and they were rendered easy victims to disease. While faulty sanitation was the direct cause in many cases, quite a number were due to direct contagion, the disease being communicated in many instances with fatal result, some preferring to run the risk of communicating disease to others, rather than to be deprived the pleasure of society and attendance on places of public resort. I am sorry to say that it too frequently happens that the attending physician inculpates himself by lending his aid and assistance in covering up and keeping hidden the true nature of the disease.

Hygeia.

A CITY OF HEALTH.

BY DR. BENJAMIN WARD RICHARDSON,

Of London, Eng.

(Continued from page 589, December issue.)

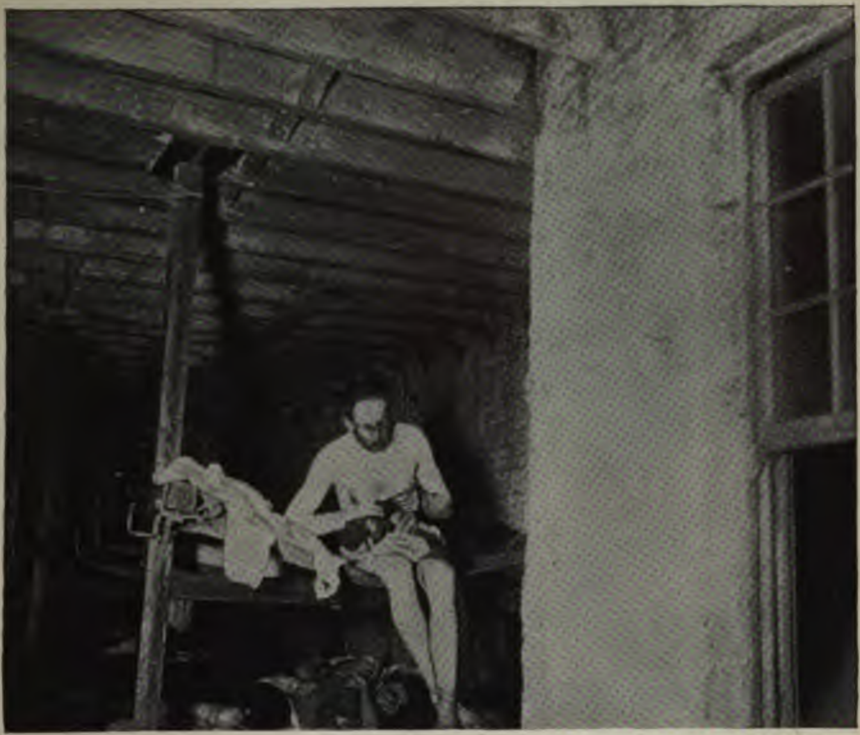
I NOW come to the design I have in hand. Mr. Chadwick has many times told us that he could build a city that would give any stated mortality, from fifty, or any number more, to five, or perhaps some number less, in the thousand annually. I believe Mr. Chadwick to be correct to the letter in this statement, and for that reason I have projected a city that shall show the lowest mortality. I need not say that no such city exists, and you must pardon me for drawing upon your imaginations as I describe it. Depicting nothing whatever but what is at this present moment easily possible, I shall strive to bring into ready and agreeable view a community not abundantly favored by natural resources, which, under the direction of the scientific knowledge acquired in the past two generations, has attained a vitality not perfectly natural, but approaching to that standard. In an artistic sense it would have been better to have chosen a small town or large village than a city for my description; but as the great mortality of States is resident in cities, it is practically better to take the larger and less favored community. If cities could be transformed, the rest would follow.

Our city, which may be named *Hygeia*, has the advantage of being a new foundation, but it is so built that existing cities might be largely modeled upon it.

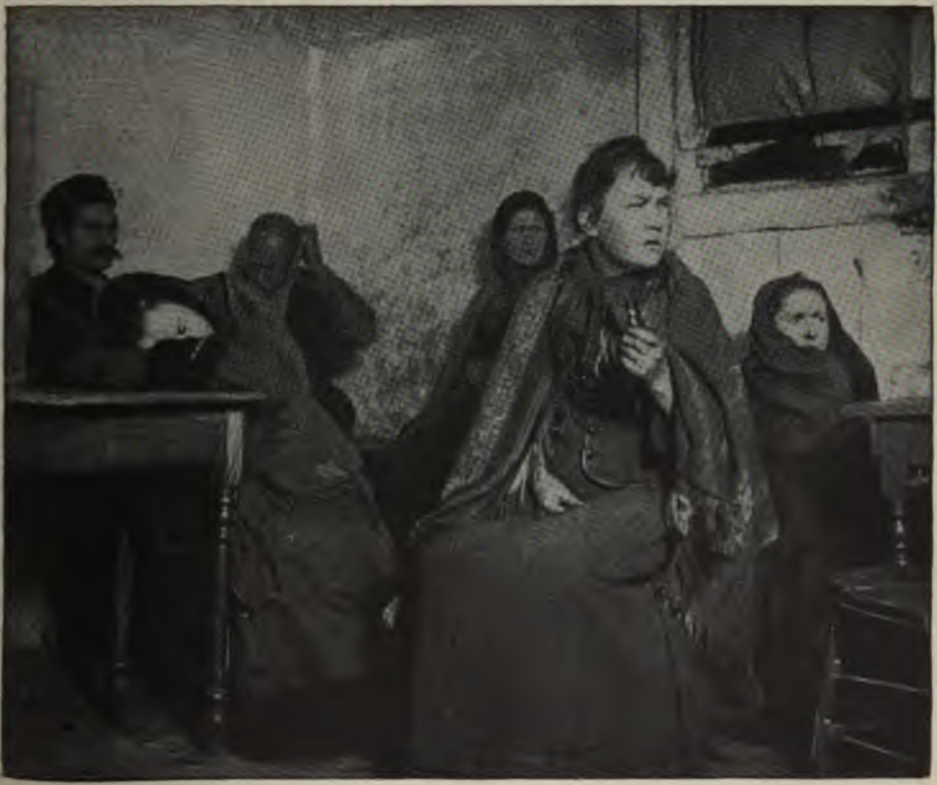
The population of the city may be placed at 100,000, living in 20,000 houses, built on 4,000 acres of land—an average of 25 persons to an acre. This may be considered a large population for the space occupied, but since the effect of density on vitality tells only determinately when it reaches a certain extreme degree, as in Liverpool and Glasgow, the estimate may be ventured.

The safety of the population of the city is provided for against density by the character of the houses, which insures an equal distribution of the population. Tall houses overshadowing the streets, and creating necessity for one entrance to several tenements, are nowhere permitted. In streets devoted to business, where the tradespeople require a place of mart or shop, the houses are four stories high, and in some of the western streets where the houses are separate, three and four-storied buildings are erected; but on the whole it is found bad to exceed this range, and as each story is limited to fifteen feet, no house is higher than sixty feet.

The substratum of the city is of two kinds. At its northern and highest part, there is clay; at its southern and southeastern, gravel. Whatever disadvantages might spring in other places from a retention of water on a clay soil, is here met by the plan that is universally followed, of building every house on



THE BISMARCK—SEVEN-CENT LODGING-HOUSE IN PELL STREET.



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arches of solid brickwork. So, where in other towns there are areas and kitchens, and servants' offices, there are here subways through which the air flows freely, and down the inclines of which all currents of water are carried away.

The acreage of our model city allows room for three wide main streets or boulevards, which run from east to west, and which are the main thoroughfares. Beneath each of these is a railway along which the heavy traffic of the city is carried on. The streets from north to south which cross the main thoroughfares at right angles, and the minor streets which run parallel, are all wide, and, owing to the lowness of the houses, are thoroughly ventilated, and in the day are filled with sunlight. They are planted on each side of the pathways with trees, and in many places with shrubs and evergreens. All the interspaces between the backs of houses are gardens. The churches, hospitals, theaters, banks, lecture-rooms and other public buildings, as well as some private buildings, such as warehouses and stables, stand alone, forming parts of streets, and occupying the position of several houses. They are surrounded with garden space, and add not only to the beauty but to the healthiness of the city. The large houses of the wealthy are situated in a similar manner.

The streets of the city are paved throughout with the same material. As yet wood pavement set in asphalt has been found the best. It is noiseless, cleanly and durable. Tramways are nowhere permitted, the system of underground railways being found amply sufficient for all purposes. The side pavements, which are everywhere ten feet wide, are of white or light gray stone. They have a slight incline toward the streets, and the streets have an incline from their centers toward the margins of the pavements.

From the circumstance that the houses of our model city are based on subways, there is no difficulty whatever in cleansing the streets, no more difficulty than is experienced in Paris. That disgrace to our modern civilization, the mud cart, is not known, and even the necessity for Mr. E. H. Bayley's roadway movable tanks for mud sweepings—so much wanted in London and other towns similarly built—does not exist. The accumulation of mud and dirt in the streets is washed away every day through side openings into the subways, and is conveyed, with the sewage, to a destination apart from the city. Thus the streets everywhere are dry and clean, free alike of holes and open drains. Gutter children are an impossibility in a place where there are no gutters for their innocent delectation. Instead of the gutter, the poorest child has the garden; for the foul sight and smell of unwholesome garbage, he has flowers and green sward.

It will be seen, from what has been already told, that in this our model city there are no underground cellars, kitchens or other caves, which, worse than those ancient British caves that Nottingham still can show the antiquarian as the once fastness of her savage children, are even now the loathsome residences of many millions of our domestic and industrial classes. There is not permitted to be one room underground. The living part of every house begins on the level of the street. The houses are built of a brick which has the following sanitary advantages: It is glazed, and quite impermeable to water, so that during wet seasons the walls of the houses are not saturated with tons of water, as is the case with so many of our present residences. The bricks are perforated transversely, and at the end of each there is a wedge opening, into which no mortar is inserted, and by which all the openings are allowed to communicate with each other. The walls are in this manner honeycombed, so that there is in them a constant body of common air let in by side openings in the outer wall, which air can be changed at pleasure, and, if required, can be heated from the firegrates of the house. The bricks intended for the inside walls of the house, those which form the walls of the rooms, are glazed in different colors, according to the taste of the owner, and are laid so neatly that the after-adornment of the walls is considered unnecessary, and, indeed, objectionable. By this means those most unhealthy parts of household accommodation, layers of moldly paste and size, layers of poisonous paper, or layers of absorbing color stuff or distemper, are entirely done away with. The walls of the rooms can be made clean at any time by the simple use of water, and the ceilings, which are turned in light arches of thinner brick or tile, colored to match the wall, are open to the same cleansing process. The color selected for the inner brickwork is gray, as a rule, that being most agreeable to the sense of sight; but various tastes prevail, and art so soon ministers to taste, that, in the houses of the wealthy, delightful patterns of work of Pompeiian elegance are soon introduced.

As with the bricks, so with the mortar and the wood employed in building—they are rendered, as far as possible, free from moisture. Sea sand containing salt, and wood that has been saturated with sea water, two common commodities in badly-built houses, find no place in our modern city.

The most radical changes in the houses of our city are in the chimneys, the roofs, the kitchens and their adjoining offices. The chimneys, arranged after the manner proposed by Mr. Spencer Wells, are all connected with central shafts, into which the smoke is drawn, and, after being passed through a gas furnace to destroy the free carbon, is discharged colorless into the open air. The city, therefore, at the expense of a small smoke rate, is free of raised chimneys and of the intolerable nuisance of smoke. The roofs of the houses are but slightly arched, and are indeed all but flat. They are covered either with asphalt, which experience out of our supposed city has proved to last long and to be easily repaired, or with flat tile. The roofs, barricaded round with iron palisades, tastefully painted, make excellent outdoor grounds for every house. In some instances flowers are cultivated on them.

The housewife must not be shocked when she hears that the kitchens of our model city and all the kitchen offices are immediately beneath these garden roofs; are, in fact, in the upper floor of the house instead of the lower. In every point of view, sanitary and economical, this arrangement succeeds admirably. The kitchen is lighted to perfection, so that all uncleanliness is at once detected. The smell which arises from cooking is never disseminated through the rooms of the house. In conveying the cooked food from the kitchen, in houses where there is no lift, the heavy-weighted dishes have to be conveyed down, the emptied and lighter dishes up-stairs. The hot water from the kitchen boiler is distributed easily by conducting pipes into the lower rooms, so that in every room and bedroom hot and cold water can at all times be obtained for washing or cleaning purposes; and as on every floor there is a sink for receiving waste water, the carrying of heavy pails from floor to floor is not required. The scullery, which is by the side of the kitchen, is provided with a copper and all the appliances for laundry work; and when the laundry work is done at home, the open place on the roof above makes an excellent drying ground.

In the wall of the scullery is the upper opening to the dust-bin shaft. This shaft, open to the air from the roof, extends to the bin under the basement of the house. A sliding door in the wall opens into the shaft to receive the dust, and this plan is carried out on every floor. The coal-bin is off the scullery, and is ventilated into the air through a separate shaft, which also passes through the roof.

On the landing in the second or middle stories of the three-storied houses there is a bathroom, supplied with hot and cold water from the kitchen above. The floor of the kitchen, and of all the upper stories, is slightly raised in the center, and is of smooth, gray tile; the floor of the bathroom is the same. In the living-rooms, where the floors are of wood, a true oak margin of floor extends two feet around each room. Over this no carpet is ever laid. It is kept bright and clean by the old-fashioned beeswax and turpentine, and the air is made fresh and is ozonized by the process.

Considering that a third part of the life of man is, or should be, spent in sleep, great care is taken with the bedrooms, so that they shall be thoroughly lighted, roomy and ventilated. Twelve hundred cubic feet of space is allowed for each sleeper, and from the sleeping apartments all unnecessary articles of furniture and of dress are rigorously excluded. Old clothes, old shoes and other offensive articles of the same order are never permitted to have residence there. In most instances the rooms on the first floor are made the bedrooms, and the lower the living-rooms. In the larger houses, bedrooms are carried out in the upper floor for the use of the domestics.

To facilitate communication between the kitchen and the entrance-hall, so that articles of food, fuel and the like may be carried up, a shaft runs in the partition between two houses, and carries a basket lift in all houses that are above two stories high. Every heavy thing, to and from the kitchen, is thus carried up and down from floor to floor, and from the top to the basement, and much unnecessary labor is thereby saved. In the two-storied houses the lift is unnecessary. A flight of outer steps leads to the upper or kitchen floor.

[TO BE CONTINUED.]

THE sun never sets on the soil of the United States. When it is 6 o'clock at Attoo Island, Alaska, it is 9.36 o'clock A.M. the next day on the eastern coast of Maine.

The Beginnings of Disease.

BY JOSEPH F. EDWARDS, M.D.

(Continued from page 596, December issue.)

PART II.

THE EARLY SIGNS OF CHRONIC ORGANIC DISEASE.

BEFORE presenting some of the ordinary signs or symptoms of the various chronic organic diseases, I would again remind and forcibly impress my readers with the fact that in the very early stages of an organic disease that has commenced as a chronic affection, these signs will not, as a rule, be present. For the reasons that I have already given, in the very early stages the disease can only be recognized by a thorough and careful examination; but, by such an investigation as that which I have already detailed, it is my belief that not only can we discover the presence of organic disease in its incipiency, but that we can, in most cases, foretell its coming even before the organ has become affected. After the chronic degeneration has been going on for some time, it will have produced such an impression upon the system, because of the imperfect performance of duty of the organ or organs so affected, that signs will present themselves to the observation of the patient. I will now proceed to detail some of the signs or symptoms of the various chronic diseases, giving only such as will be noted by the patient himself.

CANCER OF THE LIVER.

There will be noted dyspepsia, the patient will be much troubled with wind in the stomach and bowels, and there will, most likely, be constipation. Just below the border of the ribs, on the right side, there will be a sense of uneasiness and dragging, sometimes amounting to pain, and increased upon pressure. As the disease progresses the patient will lose flesh and strength, and will have a worn, dejected expression, with pinched features and harsh, dry skin.

Of course, many persons will note these symptoms when they do not have cancer of the liver; but, when such signs are present, it is impossible to say that this fatal disease does not exist without a most careful chemical, microscopical and physical examination by the physician.

SCLEROSIS OF THE LIVER.

This is a chronic disease in which there is a hardening of the tissue of the liver, so that the organ cannot properly perform its duty. The cause of this disease is, generally, the prolonged use of alcoholic drinks, not necessarily to the point of excess, as evidenced by drunkenness. The man who has never been drunk in his life may yet have consumed enough alcohol to cause the disease; it is *prolonged use* rather than *occasional excess* that causes the derangement.

If a man who is in the habit of drinking has occasional attacks of jaundice, it is not unlikely that this disease of the liver is becoming established; and, indeed, this is frequently the only symptom in the early stages of the disease. Later on there may be dyspepsia, some swelling of the abdomen, enlargement of the veins over the abdomen, hemorrhage from the stomach or bowels, and there may be pain over the liver.

Owing to the drinking habits so prevalent in this country, this form of liver disease is extremely common; and it is doubly a pity that this is so, because I believe that while the use of alcohol is to be deprecated, still it would be possible for a reasonable man to reasonably gratify his taste in this direction, without so much danger to himself, did he but intelligently look into the question of alcohol in its relation to the human body.

AMYLOID LIVER.

This form of liver disease is due to the conversion of the normal tissue of the liver into a material that has been termed *amyloid*, because of a slight resemblance which it bears to starch. Jaundice is nót present in this disease—in fact, there are no characteristic symptoms—emaciation and paleness or waxiness of complexion being the only signs of a departure from health. An examination of the evacuations from the bowels would seem to me to be of especial service in ascertaining the existence of this disease, and a regulation of the diet, of digestion, and of the condition of the blood of paramount importance in checking its progress. If left to itself, after a while the kidneys will undergo this same form of degeneration, the patient will grow gradually weaker and thinner, and death will ensue. The natural tendency of this disease, when unchecked by appropriate treatment, is to terminate fatally.

ABSCESS OF THE LIVER.

In this disease we have a "*gathering*" (just as we might have on the surface of the body) in the structure of the liver. The symptoms that are presented will be more marked, but will be, oftentimes, very misleading; thus, there will be fever, but it will be of such a type as to suggest malaria; there may be marked dyspepsia and obstinate vomiting, debility and irritability of the nervous system, melancholy, slight jaundice and constipation.

BRIGHT'S DISEASE OF THE KIDNEYS.

Under this heading I will group all the different forms of chronic kidney disease, because such an arrangement will be, I believe, better understood by the public.

Of all the various forms of chronic kidney disease, medical authorities are united in the assertion that the onset is gradual and insidious, and the affection is seldom recognized by the patient until the appearance of dropsy under the eyes, of the face, or all over the body, gives evidence that the disease is already far advanced. It may be that irritation of the bladder, causing a desire to very frequently pass water, will be an early symptom. Paleness or waxiness of the complexion is a very common sign. Vague neuralgic pains in different portions of the body, that the patient will think are rheumatic, will often be noted. In fact, I have come to believe that very much of the so-called rheumatism, the pains and soreness all over the body, or confined to certain portions thereof, not severe enough to confine one to bed, yet nearly always somewhere present, accompanied by a rather dry and warm feeling of the skin, not really amounting to fever, is a frequent sign of the early stages of Bright's disease. *The person of 40 years of age and over, who thinks that he is a sufferer from chronic rheumatism, will do well to have the condition of his kidneys inquired into.*

Huskiness of the voice may be an early sign of this disease, caused by a swelling of a part of the organs of speech; chronic cough may be caused by Bright's disease, and dimness of vision is a not infrequent symptom. A sense of oppression about the chest; a difficulty in breathing, sometimes very slight, and only occasionally noted, will frequently indicate the early stages of the disease. In one case that I recall this was the only symptom noticed by the patient for a period of five years; it would occur at intervals, and was supposed to be asthmatic; finally, a swelling under the eyes appeared, attention was thereby called to the kidneys, an examination revealed "Bright's disease" in its later stages, and death shortly afterwards terminated the case. If the difficulty in breathing had been noted in the beginning, this patient's life would have been, doubtless, much prolonged; for she was a woman who was regardless of hygiene, and whose life was not so ordered as to delay the progress of any chronic organic disease, much less that of the kidneys.

Dropsy or swelling is not always present in this disease even when it is far advanced. Very pale urine may indicate the disease, as also very forcible action of the heart, so that its pulsation becomes evident to the senses; occasional vomiting, regardless of food; headache, vertigo, and drowsiness may be warnings of the disease; violent itching of the skin has been noted as an early symptom. There may sometimes be felt pain over the region of the kidneys, but this is by no means as common a symptom as many persons suppose, and its absence is no evidence at all that kidney disease does not exist.

Persistent dyspepsia is a symptom that should never be overlooked. It does not always indicate "Bright's disease," but it does almost always mean that there is either some chronic organic trouble or some faulty habit of life. Like dropsy, dyspepsia is really only a symptom; it means that the stomach is not properly doing its work; and unless there be some plainly obvious cause for this, such as hasty or improper eating, it is very likely that the cause of this faulty stomach action is some chronic organic disease of the stomach itself, or of some other organ.

So great is the importance that I attach to persistent dyspepsia as an early sign of "Bright's disease" that if I myself were to have dyspepsia lasting several days, unless I could plainly see its cause, I would want to have made a most searching examination into the condition of my kidneys.

If there be one chronic organic disease more than another in which the early signs are ill-defined and vague, it is that under consideration. I would hardly be guilty of exaggeration if I were to say that *any and every uncomfortable feeling of which the human being is capable may mean beginning "Bright's disease."*

It must, therefore, be plainly evident from what I have said that "Bright's disease" of the kidneys will be discovered only by a thorough investigation of the condition of these organs, and that there are no evident characteristic symptoms that will make the disease, in its early stages, evident to the patient.

The examination of the urine is not by any means the simple process that some persons suppose. I have known some patients, who had Bright's disease, who would supply themselves with test tubes and a bottle of nitric acid, and who would make periodical examinations of their urine for albumen, thinking that when they could do this they had gained an intimate familiarity with their disease. Now, when I tell you that a large book of over 700 pages has been written, the whole of it devoted exclusively to the examination of the urine, you will be ready to understand how far from a simple task such an examination must be; in addition to which we must learn that the presence or absence of albumen in the urine is by no means the very important positive or negative sign that it was once supposed to be; it possesses its value, but only in connection with other signs.

CANCER OF THE STOMACH.

Swelling of the ankles is one of the earliest symptoms in cancer of the stomach, sometimes occurring as early as during the first three months of the disease. After the disease has become somewhat established, vomiting becomes a prominent symptom: it may occur immediately after eating or not for several hours. A dull, heavy, constant pain over the stomach is an early symptom. Indigestion, accompanied by flatulency and bad breath, is nearly always present.

The patient loses flesh and strength, and the complexion assumes an earthy or fawn color.

It is now rather generally conceded that in those who are predisposed thereto, irritation of some kind is the cause of cancer; and I believe that cancer of the stomach is no exception to this rule. Just as the continued smoking of a short-stem clay pipe, or the constant irritation of a snag of a tooth may be the irritating cause of cancer of the tongue, so I believe irritating food or drinks may be the cause of cancer of the stomach in those who are predisposed thereto. From what I have already said about the pre-cancerous stage of cancer in the first part of this article, it will be readily inferred that early recognition of cancer of the stomach is absolutely necessary in order that the patient may receive any benefit from treatment.

LITHÆMIA—"THE CONDITION OF ARISTOCRACY."

This is a condition rather than a disease, for it means that the body is overcharged with nitrogenized waste; that is to say, owing to faulty methods of life the waste of certain parts of the body is very great, and is not being properly and thoroughly removed therefrom. This condition possesses a peculiar interest for the wealthy class, because their wealth enables them to so live as to make this condition a possibility. Lithæmia is almost unheard of among the day laborers; it might be called the "condition of the aristocracy."

Just as the garbage, which is the refuse of his table, will be very abundant at the back door of the rich man, because his wealth has allowed him to load his table with a variety and an abundance so great that it cannot be consumed, so the waste in the body of the rich man will be very great, because the tempting viands and the savory cooking which his wealth has permitted him to enjoy will tempt him to eat more than his system can appropriate. Owing to the excellence of its preparation in the kitchen, aided by the adjuvants to digestion in the shape of wines and liquors, combined with a naturally strong digestive system, this excess of food is digested and carried into the circulation; but the system, which knows when it has had enough, will refuse to be either forced or coaxed into appropriating more nourishment than it requires; hence this excess of useless matter, which, because it is not needed, has become really waste matter, must go floating about the body seeking a way of getting out of it. The *early* recognition of this condition is of extremely vital importance, for it clearly signifies one of two indications. When the system is overloaded with this waste matter, it must be evident either that the organs by which it should be removed from the body are already diseased, and therefore unequal to their task, or that the labor that is being imposed upon these organs is so much greater than they are equal to that they will soon become diseased if not at once relieved of their overburden of work. It is in this condition of lithæmia that such a searching and careful investigation as I have already outlined will afford the most gratifying results.

Among the symptoms of this condition will be dyspepsia, associated with irregularity of the bowels; constipation alternating with diarrhœa; the urine will be rather scanty and high-colored; there will be depression of spirits; the memory will be impaired; all interest in one's occupation will be lost; the patient will take a gloomy view of everything; sleeplessness, vertigo and neuralgic pains in the head will be present, and there will be forebodings of evil import.

In all the field of medicine there are few conditions connected with which there is such an element of certainty, so to speak, as with lithæmia. A careful examination will always reveal the disorder; it is usually capable of complete cure; if neglected, it is bound to eventuate in incurable chronic organic disease of one or more of the vital organs. Being a condition of the rich, it occurs amongst a class of people who can afford to consult the best professional assistance, and to fully carry out the necessary treatment. There is hardly any other condition so amenable to treatment, yet at the same time so terribly and fatally potent for evil if neglected and left to its course.

If a patient who presents some of the symptoms enumerated above is found to be free from organic disease, we can, upon examination of the blood, form a positive opinion as to the presence or absence of lithæmia, and we can cure the condition. It will be a God-send to the rich man if he discovers the condition in its incipiency.

DIABETES MELLITUS.

Diabetes is somewhat familiar to the public, hence it would seem scarcely necessary to describe the nature of the disease. For symptoms, we note the passage of an unusually large amount of urine, which is clear, pale and watery, and has a sweetish odor. As a rule, the bowels are constipated, but occasionally diarrhœa will occur. The tongue is red, and often cracked and fissured. In females, itching about the "private parts" is not uncommon. As a rule, there is thirst, with a dry and parched condition of the mouth. More or less weakness is usually noted, and there may be soreness or even pain in the limbs. An important sign is a diminished sexual desire and ability, so that this disease may cause a condition of impotency, and might be the explanation of some cases of sterility. The patient's spirits are usually depressed; he loses some of his firmness of character, and is very apt to be irritable and easily annoyed. The imagination may be very vivid, and the ability to concentrate one's mental powers may be impaired. The appetite may be at times voracious.

The onset of this disease is extremely insidious, but a careful investigation will always reveal its presence. If discovered in the early stages, it may be radically cured; but even though it be far advanced, there are few diseases that can be so effectually held in check by appropriate treatment as diabetes.

CONSUMPTION OF THE LUNGS.

Now we come to the disease which, of all others, requires recognition in its early stages. With most chronic organic diseases, while we can do much more if they are early recognized, yet, even though they may be far advanced, we can still do much for the comfort of the patient and for the prolongation of his life. Unfortunately, this is true only to a limited extent of the "great white plague," consumption. When this destructive disease of the lungs is once well established, its course is but little influenced by treatment, comparatively speaking; it steadily, with varying degree of rapidity, hurries its patient along to the grave. If, however, consumption be discovered in its *very early* stages, it is, undoubtedly, a curable disease. Unfortunately, however, because of the apparent insignificance of its early symptoms, the physician is rarely consulted until it is well advanced, in consequence of which this disease, that could have been cured if taken in time, is annually killing thousands of human beings.

There is a curious feature about consumption, in that it is characterized by an absolute want of appreciation on the part of the patient of the gravity of his situation. It is a singular fact that, even to the last, the consumptive cannot persuade himself, nor can he be persuaded, that he is really seriously sick. I have seen patients dying of consumption, who, up to within twenty-four hours of a fatal termination, were confident that they would get well from what they would insist upon believing was merely "a heavy cold." It is probably because of this singular, inherent buoyancy of spirit on the part of consumptives that the disease is not recognized in its earlier stages. Thinking that they have merely "a cold" that will right itself, they fail to consult a physician until the disease is far advanced and beyond his skill to control.

It is a sad and terrible thought that this disease, which is annually killing so many thousands of persons, being responsible for more deaths than any other two or three diseases combined, causing, it is estimated, about one-seventh of all the deaths that occur—it is a frightful reflection upon our want of forethought when we realize that, if taken in time, this disease is curable.

But, that the disease may be cured, it MUST BE RECOGNIZED IN ITS VERY EARLY STAGES, at a period when the signs or symptoms which it offers to the patient are indeed, seemingly, trifling and beneath notice.

It would be a most wonderful thing for humanity if some bacteriologist could discover the micrococci or the bacteria of "COMMON SENSE," and if humanity could be universally inoculated therewith. When the teachings of "common sense" have made their effects manifest, then will the public cease seeking for some mysterious remedy for consumption. While believing in progress, and thoroughly sympathizing with all onward movements, I yet feel confident that the world will never have any more accurate method of dealing with consumption than it has to-day. *Our knowledge of to-day teaches us that in the very earliest stages of the disease consumption is curable, and it teaches us how to effect a cure. In the advanced stages the disease is incurable, and all that we can do is to postpone for a short time the inevitably fatal termination.*

I feel that if, in the year 2891, some medical bibliomaniac happens across a copy of this little article, he will be surprised to learn that in the year 1891 we knew just as much about the cure of this disease as he does 1,000 years later.

Of other diseased conditions, I feel that there is room for us to learn more than we now know; but with consumption I am confident that the case is different. I am satisfied that while we may become more familiar with certain features of the disease, we will never know more about the means of cure or of prevention. The great point that we now want is, that the public shall recognize the necessity of consulting the physician, so that he will be able to ascertain the beginning of the disease in its very early stages. There is no empiricism about the treatment of consumption in its early stages; we have science as our guide; and if every case is not cured, it is not because we do not know what to do, but rather because of the inevitable law that all of us must die at some time.

Now, then, to bring these "beginnings" to an "ending," let us sum up the essence of what we have written, and lay it before our readers in the form of a solemn injunction, that if they would avoid chronic organic disease, a condition that can have but one termination, it is simply imperative that they must know more about their physical state than it is the ordinary custom of the day for them to know.

Civilization and Pain.

Civilized mankind has of will ceased to torture, but in our process of being civilized we have won, I suspect (says Dr. S. Weir Mitchell), intensified capacity to suffer. The savage does not feel pain as we do; nor, as we examine the descending scale of life, do animals seem to have the acuteness of pain-sense to which we have arrived.

Some Neglected Points in Railroad Sanitation.*

BY HORACE R. SMITH, A.M., M.D.,
Of Altoona, Pa.,
Medical Examiner, Pennsylvania Railroad Volunteer Relief Department.

THE question of general railroad sanitation is one of such wide scope that to discuss it in any sense exhaustively would require an unnecessarily large proportion of the time of this convention; much of the matter, withal, would be but a reiteration of both acknowledged and mooted points.

In view of this fact, I have deemed it best to invite your attention to a few neglected points in the subject, which appeal to me as ripe for early remedial measures.

I consider it eminently befitting, by way of preface, to state that the company in whose service I have the honor to be has always taken a warm interest in the subject of sanitation, and heartily desires to initiate any procedure which will promote the physical welfare either of the traveling public or of their employees.

It was the earnest desire of the Pennsylvania Railroad Company, through the relief department and its efficient corps of medical examiners, to accomplish much in the way of general sanitation, but thus far only a portion of the work planned has been accomplished.

"Faithful are the wounds of a friend." As an employee and friend of one of the greatest of railroads, I criticise not carpingly but honestly, desirous only of calling attention to a few of the more prominent hinderances in the path leading to that "Ultima Thulé"—perfect sanitation.

Considering the health of the "traveling public" as paramount, I will only discuss those questions pertaining to this, reserving all others, as to the health of the employees, though not a whit less important, for future consideration.

Let us first, as an initiatory step, take a cursory glance along the line of a railroad, at the sanitary arrangements of the various stations.

In the larger cities, where there is an adequate water supply and sewerage, the water-closets are usually in pretty fair condition; but even here, where the problem seems easiest of solution, the plumbing is often defective, the ventilation bad, and a little neglect of proper attention changes a moderately good system into a veritable "Augean stable."

I call to mind an examination I once made of a water-closet and attendant pipes; everything seemed in an apparently sanitary condition until I got to the cellar, where I found, by strange anomaly, an exposed trap which was absolutely impervious, and the excrementitious fluids and solids were meandering their own sweet way through the cellar.

I cannot refrain from the passing comment, which is a fact, that the person who spent the major part of his time above this whited sepulchre was affected with malarial fever and digestive disorders.

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* Read before the State Sanitary Convention, at Altoona, Pa., 1891.

My attention was called not long ago, by a plumber, while at work upon an administrative office building, to the singular closing of an iron drain pipe, about three inches in diameter, leading from a urinal; the lumen for the whole length, several feet, was almost entirely filled up with a gelatinous, spongy substance with a pungent, fetid odor.

This was a remarkable evidence of the fact I have often noticed before, of the tendency of all iron pipes to allow coagulations to adhere to the sides, even though the matter supposed to pass through be entirely liquid.

It seems to me that all such pipes should be periodically cleansed with strong lye, or sal soda, as often as possible. I merely narrate these circumstances to show what a "whited wall" the whole system of water-closets may be if proper and adequate attention be not devoted to them.

However, I must pass on to the subject of country closets, and here we are brought *vis-a-vis* with a problem of much more difficult solution. The need of a remedy is a crying one, and "appeals to heaven;" for may not any of us bring to mind a peculiarly atrocious closet along the line of some railroad, with its pit of seething filth, unkempt and soiled floors, where one pays tribute to the goddess Cloaca only at the risk of his life?

Acknowledging the evil, as all observers do, what remedy commensurate can be suggested, which will be not so expensive in application as to commend itself as feasible to a railway superintendent? Two methods suggest themselves, namely, an absolutely water-tight pit, and the dry-earth system. If a pit must be used, it should be well cemented, allowing of neither ingress nor egress of fluids from the surrounding surface; disinfectants should be systematically used, the ventilation especially looked after, and, lastly, the vault itself should be periodically excavated. In winter a thorough ventilation can be very simply arranged by running a ventilating pipe from the vault direct to the furnace or stove flue. Apropos of this method of ventilation, I would say that I have secured very effective results by running a pipe direct from the soil-pipe in my cellar to my furnace flue, giving me perfect ventilation.

The "dry-earth system" of closets is ideal in its conception, simple in its arrangement, and easily carried out. It seems to me that it is the only proper method for country stations, and I would like to see it adopted. The station agent, with the assistance of a special detail of men from the maintenance of way department, could be made responsible for the proper maintenance of the closet, using as a good substitute for the dry earth the sifted ashes from the various stoves.

From a careful study of the subject, I do not see why the practical application of this system should be at all expensive, for the total amount of excrementitious material in the large majority of country stations is small, and the work train or any other simple method could dispose of it at slight additional expense. An ordinary car of special construction could easily be used over several divisions, and the difficulty of securing the desired labor is solved by the fact that the ordinary foreign laborer available is not averse to performing such duties.

The subject of sanitation, as regards passenger cars, is one which needs much thoughtful consideration, and is replete with problems of most difficult solution. The present methods of heating, ventilation, supplying drinking water in immovable tanks, and the average water-closet, are all more or less defective and need readjustment.

It is acknowledged by all that the ventilation of passenger cars is not what it should be; but the difficulties in the way are so great, and the exigencies which arise so many, that the problem is almost unsolvable. Besides the difficulties of construction, due to the American system of building railway cars, there is the rapid motion of the train through space, the necessarily small breathing space for a large number of passengers, and lastly and always the angularities of human nature, which, in the traveling public, bristle like the quills of the "fretful porcupine." The young, the old, the thick, the thin, the warm, the cold, all disagree as to the character and amount of ventilation.

Who of us, on entering a car which has been running all night, has not noticed the powerful penetrative odor of human exhalations, like that of a bedroom the windows of which have not been raised at night? On many railroads the means of ventilation are almost *nil;* on the Pennsylvania Railroad, however, the openings at the top of the car are a very good means of giving a fair supply of fresh air, if the instructions as to their attention are properly carried out.

I would that I might offer a practical suggestion as to some feasible plan for perfect ventilation of passenger cars, but I must confess that the problem is just as puzzling to me as to those who have given the subject undivided time and attention. I trust, however, that some one may discover the solution for the benefit of the undeterminate, yet relatively very large number of people, who spend much of their life in the cars. There ought certainly to be some radical changes made in the arrangements of tanks for drinking-water in passenger cars generally, for the water one has to drink on some railroads is oftentimes both disagreeable to the taste and harmful to the whole digestive apparatus. These tanks are usually constructed in the car, immovable, almost a "cul-de-sac," with a single outlet, and placed in such an inconvenient position that it is virtually impossible to thoroughly clean them. They are filled with water usually by a hose from the top of the car, a chunk of ice is tossed in, and this process goes on from day to day, and week to week, until the sediment on the bottom and sides of the tank may become a prolific source of disease. On this account, to the confirmed dyspeptic, the mother with thirsty little children, and in fact all persons subject to digestive disorders, travel in summer becomes a veritable *bete noir.* It would be a boon devoutly to be desired, if some of the bright minds in the service of the various railroad companies could conjure up a practical plan to give us pure air and pure water.

It has been suggested* that a tank be constructed, consisting of a tube within a tube, so that the inner one could be extracted and cleansed; this should be placed in such an accessible position that would assure adequate and proper attention.

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* Transactions Am. Pub. Health Association, 1889—Dr. S. W. Latta, Chief Medical Examiner P. R. R.

The subject of passenger-car water-closets needs more than a passing consideration; for have we not, in traveling over the various railroads of the country, rebelled against the odors and sights of the closets of some of the passenger cars? The ammoniacal smell and the oftentimes soiled condition of the funnel-shaped tube leading externally, are sufficient to nauseate the least squeamish.

To call attention to an evil is a simple matter, to produce a remedy sometimes involves so many difficulties as to render the task almost insuperable. I feel bound to say, in this connection, that the Pennsylvania Railroad Company has endeavored to do away with all these evils, and, as a result of constant experimentation, has made marked improvements. One notable improvement which has already been made is the laying of an asphalt floor in all water-closets; this is easily cleansed, and a proper application of the excellent P. R. R. disinfectant does away almost entirely with the usual disagreeable odor. It would be a great improvement, if it be at all possible, to run the exit tube from the water-closet straight down without a deflection, thus avoiding the soiling of the sides.

Before leaving the subject of water-closets in passenger cars, a question of grave importance arises, namely, with the present system as it is, during an epidemic of cholera or typhoid fever, what would hinder the scourge from being spread broadcast over the country almost, as it were, on the wings of the wind? The virulence of the poison is most marked in the excreta, and this, being spread promiscuously along the roadbed, would certainly be a menace to the public health. The only feasible solution of this problem, as it appears to me, lies in the dry-earth system; a proper receptacle being necessarily carried along with the car, to be emptied and cleaned at proper intervals. Hitherto the question has not arisen, but the time may come when prompt and adequate measures must be taken.

Another evil which appeals daily for remedy is the commonly soiled condition of the strip of carpet or matting running down the aisle of many passenger cars, soaked in the sputa of innumerable passengers, the cachectic and consumptive alike, it cannot but be a source of danger to the public health. The carpet is likely to become impregnated with disease germs, which, on being disturbed by the thousands of restless feet passing through the car, rise into the air in an impalpable powder, to be inhaled into the lungs of the unsuspecting traveler.

The recent studies on the subject of bacteria and the acknowledged contagiousness of the bacillus of tubercular phthisis make this a real cause for alarm. I firmly believe the carpet should be dispensed with, and in its stead a rubber strip might be used, or, if that be too expensive, use nothing, the well-painted or asphalted surface being easily mopped up by the car cleaner.

The trite adage, "What is everybody's business is nobody's business," finds a true exemplification in railroad as well as in general sanitation. Many evils remain uncorrected from the mere fact that those who first notice them shrug their shoulders with the remark that it is not their business, relegating to the next man the duty of reporting it to the proper officer. This condition of affairs is to be deprecated; and, as a closing suggestion, I would earnestly advise that a proper officer be appointed, a "General Sanitary Inspector" if you will, who would be duly empowered by the proper authority to have a general supervision in sanitary matters, and to cause to be adopted such remedial measures as would be consonant with evil to be abated and with reasonable expense. This limitation of the responsibilities, with provision for remedy, would be a long step in the right direction, and would doubtless be conducive of good results.

Hotbeds of Disease.

A NIGHT IN THE "SLUMS" OF NEW YORK.

BY THE EDITOR.

IF humanity be but the combination of organic elements, it would seem to one who has just passed a night in the "slums" of a great city that it would be a most pertinent question to ask if there be not two sets of organic elements, for, with the recollections of what he has seen fresh in his mind, it seems almost impossible for him to believe that the animate objects which he has encountered in the nightmare through which he has just struggled can be but the combination of the same elements that have produced the human being with whom he has been in the habit of daily contact.

So utterly unlike, save in outward form, are the denizens of the slums, so much more closely allied to the brute creation than to the ideal type of manhood, yet so potent as factors in the perpetuation, propagation, intensification and dissemination of disease; so lowly, yet so mighty; so bestial, yet, at times, so human; so seemingly useless, yet so potent in the world's history; so unlike, yet so like the average type of humanity; so much written about, yet so imperfectly understood; leading lives so unlike that which nature has designed for us, yet constituting so large a proportion of the citizens of all large cities; made in the image of their Creator, yet, by their own acts, rendering this image well-nigh unrecognizable—such are the people whom we would study from the point of view of hygiene.

"Forty minutes in a station-house" seemed a fitting introduction to our plunge into the "slums," particularly as the station in question is located in the "slummy" district.

"Forty minutes in a station-house" would have furnished to the eloquent pen of a Beecher material for the best of sermons.

Waiting to see the captain, I seated myself in an armchair near the door.

Scene I.—Enter two policemen with a bonnetless and generally demoralized daughter of the "Emerald Isle," whose curious spinal curvature at first sight suggested something more serious, physically, than the results of alcohol. She was drunk, undoubtedly so, yet to a less experienced eye than that of the sergeant the fact would not have been immediately manifest. The dry wit that seems to be an integral part of the Irish nature seemed all the more acute because of the internally wet condition of the woman.

"What is your name?" asked the sergeant. "Maggie Boyle," was the reply. "Maggie or Margaret?" was the next question. "Maggie, sir" (with emphasis), "but they are both the same." "Where were you born?" "Ireland, sir, of course; anyone could tell that without the asking."

Scene II.—Maggie had been scarcely disposed of when a burly, kind-hearted officer entered, leading by the hand a "tot" of humanity, certainly not more than three years of age, a wee bit of a child. "Lost child, sergeant," he said, as if he were accustomed to finding such waifs every hour in the day; and as he passed on to deliver the crying little one to the care of the matron, I fell to reflecting upon the future of this mite; maychance she may be, some day, the wife of the President of the United States—who can tell? She is likely to be the creature of accident; she is being schooled in the cradle of adversity, an experience that will be of great benefit to her, should chance but direct her growing footsteps in the right directions; she has within her the undeveloped possibilities of greatness for good or for bad, and, as I think and wonder,

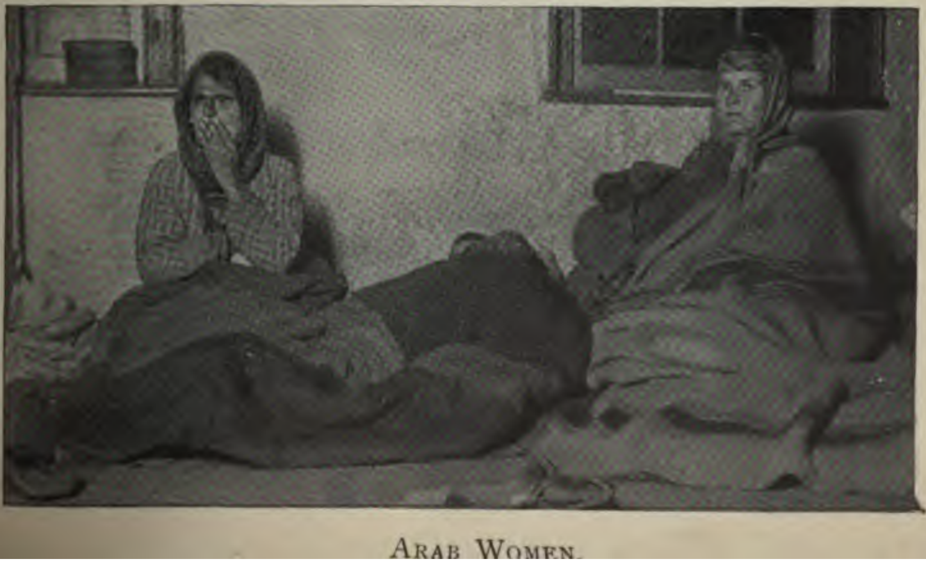
Scene III enters to answer, I fear, my question. A woman of, maybe, 30, who, if scrubbed and polished and dressed in fine clothes, would be called a fine-looking woman; her face was flushed, and the hard lines and unmistakable signs of "bummism" were beginning to form, but had not yet progressed so far as to be ineradicable; she was not drunk, yet her thick speech indicated the probability that she would be before many hours if she could raise money enough to buy the necessary article. Approaching the sergeant, and throwing her shawl from her head, with an "excuse me, sir," showing evidence of some degree of refinement not wholly lost as yet, she asked: "Have you a man named Keppler here?" "No; he has not been arrested." "We had a *scrap* last night, and this is what he did to me," throwing aside her shawl and revealing the clothing almost torn from her body; "but I showed him that I was Irish; I gave it to him; the Irish and the Dutch don't pull well together; still I'm lonely without him, and I want to find him." With this remark, uttered in a pathetic tone that clearly demonstrated that all the better traits of humanity were not yet wholly dead in this woman's breast, she sallied forth to hunt for the man who had beaten and abused her. One social outcast yearning for the company of another; truly, a human being is made to be loved!

Scene IV.—A gaunt, *sober* man of 40 enters and walks quickly to the desk. "Can I have a night's lodging?" "Yes; but we do not take day-lodgers; come in after six o'clock; you must be somewhat green to come at this hour for lodging." "I am (nervously); it is my first experience; I never asked for station-house lodging before." Suffused with shame he leaves.

These four scenes in the drama of life, enacted in one station-house in the course of forty minutes, are but samples from which can be erected the tragedy of life, as found in the slums of a great city. To the credit of the New York police be it said that these besotted outcasts are treated firmly, it is true, but with all possible kindness and consideration. Accustomed as they are to these

A TYPICAL "BUM."

IN A CHINESE RESTAURANT—MOTT STREET.



ARAB WOMEN.

depraved and often vicious characters, it was a surprise to me to see how considerate, I might say, the police officers always are. I am sure that no act or language of theirs will ever add to the degradation of these unfortunates. A daylight ramble through the streets of the "slums" was succeeded by a midnight plunge into the very thickest of the low life of New York, that I might, by actual observation, determine the truth or falsity of the idea that the "slums" of a great city are "hotbeds" of disease, wherein disease germs are always present, propagating, multiplying, acquiring increased virulence from the appropriate conditions therein found, and from which they are wafted by the winds and carried personally by the denizens of the "slums," to explain the outbreaks of disease in quarters where all sanitary conditions are good and where the cause for the occurrence of the disease has been a seeming mystery.

Philosophers tell us that there is "a law of variation" in nature, whereby its sameness and uniformity are broken up and new species or varieties are created, and that by this "law of variation" *freaks* occur everywhere.

To one who leaves the Fifth Avenue Hotel behind him and in a few minutes finds himself in the "Bismarck" lodging-house in Pell Street it would seem that the "law of variation" is a reality indeed, for it seems hardly credible that the Fifth Avenue *guests* and the "Bismarck" *lodgers* can belong to the same species or varieties of humanity. The Bismarck (I would like to study the face of the great German chancellor upon his first introduction to this hostlery named in his honor) is one of thirty similar lodging-houses located in one police precinct alone. It has no front, that is to say, it is surrounded on all sides by other buildings and access to it is gained through a dark, narrow alley. maybe five feet wide. The flagging floor of this alley was very wet, yet the stars shone brightly, while the odor that arose from this moisture was very suggestive of unhygienic and indecent practices on the part of the frequenters of the Bismarck.

The rates for lodging at this establishment vary according to the comforts furnished; caste obtains here; there are degrees of poverty; he who can afford to pay twelve cents lodges on the second floor and has an apology for a cot; for seven cents a strip of canvas stretched from two parallel bars, running the length of the room (third floor), furnishes a species of rest for the semblance of humanity that we found reclining thereon; while he who has but five cents must seek the fourth story and lie on the floor. "The Bismarck" is licensed to accommodate 270 lodgers, yet so crowded was it on the occasion of our visit that, blinded for a moment by the flashlight with which we made our illustration, I stumbled over a nude figure, on the floor, engaged in removing little foreigners from his body—a scene that brought vividly to my mind the spectacle so often witnessed in a monkey's cage.

If, I thought, there are 270 persons in this house, and if there are thirty such establishments in this one precinct alone, a little calculation will show us that there must be about 8,000 individuals who nightly seek these foul spots, and who daily sally forth therefrom to disseminate some of this foulness here, there, everywhere throughout the city. Remember that this is only one precinct of which we are speaking.

Mr. Jacob A. Riis, whose book, entitled "How the Other Half Lives," we strongly commend to our readers, has estimated that fully 1,200,000 of the citizens of New York live in tenements, not such tenements as the "Bismarck," of course, since all "flat" buildings are denominated tenements, but it would seem fair to infer that at least 200,000 persons must live, or, at least, lodge, in buildings and under conditions that are menaces to the health, not only of these particular persons, but to the city at large that harbors them.

The "slums" have been repeatedly written up in sensational form; they have been presented to the reader from an æsthetic, a moral, a religious, a philanthropic aspect; our purpose was to study them from a hygienic point of view. Our idea is that the selfish motive of self-protection should incite the better classes, the governing authorities of all communities, to thoroughly co-operate with the health authorities that the pest-spots of great cities should be eradicated.

The condition of affairs in New York City has been wonderfully improved within the past few years. The fact was recognized, some years since, that the "slums" constituted a danger to the health of the whole city; the Board of Health was given unusual and extraordinary powers, and the results of their labors have been most salutary, as we shall demonstrate later on. However, most distressing conditions still remain; gradually they are being bettered, but it is a slow process, and the conditions are still in existence, though to a lesser degree than formerly, that are most favorable to disease.

I had once under my care a man who had been of splendid physique, tall, large-boned, well-proportioned; he must have been a magnificent specimen of manhood in his prime.

When he came under my care he had a cancer on the inner aspect of his left leg; he was as tall and commanding as ever, his bones were as large, but his flesh was wasted; the skeleton of the man, as he had been, was there, but he was wasted to skin and bones. The cancer, remo'e from many portions of his body, was sending out its foulness to poison the whole system; I endeavored to build up the constitution, but it was useless; I made local applications to the cancer, but they were futile; the man was wasting away and death stared him in the face; none of his vital organs were diseased, but the cancer, away off on his leg, was sapping his strength.

As a final resort, the leg having the cancer was amputated at the knee-joint. At once, as by magic, the figure became rounded, the strength was gradually restored, the old-time vigor and perfection of physique were regained, and the man, relieved of his cancer, was truly a man again. So, does it seem to me, is the condition of a city with "slums;" though definite disease may not always be traced to this source, yet such a cancer on the body politic, remote from the usually visited sections and, to an extent, concealed from public view, is insidiously and slowly, yet none the less surely, poisoning the whole community; for what a member of the body is to the body at large, so the individual or an aggregation of individuals is to the community as a whole.

According to Mr. Riis, during one epidemic of cholera, the death rate in

Gotham Court (in the slums) was at the rate of 195 to 1,000 of population, while this same epidemic scarcely touched the clean wards, and this same authority contends that, even to-day, some portions of the "slums" are the most densely-populated districts in the whole world, not even excepting China.

A "nigger dance-house," with a white man as proprietor, was the next object that greeted our vision, where, as a seeming evidence of the fact that vice dethrones caste, white girls were to be seen participating in the festivities, yet slinking into corners and trying to pass unobserved at our entrance, giving, thereby, mute evidence that all humanity was not lost. Yet here were vice, dirt and disease; and what possible guarantee have we that in the morning these denizens of the "nigger dive" will not be at the door of the Fifth Avenue mansion?

As the advent of man seems to drive, as if by magnetic repulsion, the beasts of the forest from their haunts, as they seem, by instinct, to avoid the home of man, so it would seem that these poor, depraved wretches, of common consent herd together, and herein is a certain measure of safety. If the denizens of the "slums" could be marshalled (as they are seen on a midnight visit) into one long line and thus marched up Fifth Avenue in review before the residences of the wealthy and governing class, it would not be twenty-four hours until such an agitation would be started as would ultimately and very shortly result in the amputation of the municipal cancer.

A cellar—and such a greasy, dirty, foul, ill-smelling cellar—with a regular old-fashioned cellar entrance, down which the besotted frequenters rather stumbled than walked; a cellar with a rickety bar across one end, a dim, dusty and dirty lamp the only light, and half a score of more or less intoxicated apologies for men and women sitting on benches and barrels; a crowd gathered about the doorway, and one figure, whose dress intimated that she was a woman, and who was a little more drunk than the rest, conveying the impression, by her maudlin bewailings, that her *true name* was known to the denizens of the "slums," that some spark of humanity still lingered within her; our party, preparing to make a flashlight picture of the scene, and endeavoring to quiet, some little, the turbulent mass of chattering humanity; imagine, if you can, the scene that I would portray, and you will have a faint conception of one of the "cellar dives" in which the "slums" abound.

To the credit of the police be it again remarked that while these animals sported, so to speak, among themselves, they seemed to be, comparatively speaking, orderly, though I must confess that I felt instinctively drawn very closely to the side of the detective who accompanied us. Just before entering the "negro dive," to which reference has already been made, our detective warned us that it would not do to attempt a picture there as the exhibition of the camera would likely be the signal for a very uncomfortable display of razors, yet, as we passed out of the front door, someone in the dance-hall remarked: "To-morrow they will have all of our pictures in the rogues' gallery."

It must not be supposed that all of the residents of the slums are vicious, nor are they all poor, but they certainly are all dirty and breeders of filth. The proprietor of the "Bismarck," a German, who accompanied us through his hostlery and pocketed with thanks the fifty-cent piece we handed him for his trouble, was perfectly sober and did not give evidence of a vicious nature; neither could he be in the depths of poverty, for 270 guests at seven cents each would make his gross income in the neighborhood of nineteen dollars per night. But, while neither poor nor vicious, he and his establishment are certainly living menaces to the salubrity of the city.

Again, there is another and a most serious aspect (probably the most important of all) to this "slum" question. Laying aside, for the moment, the influence of these localities upon the health of the city, we take up the question of their demoniacal influence upon the future through the children of the slums who must become, in one way or another, burdens upon the commonwealth from the moment of their birth. The sick, the deformed, the mentally weak, the idiot, the criminal, are all equally children of the State in all civilized communities.

Is it within the bounds of reason to expect that the children of the slums will rise to a higher level than that occupied by their progenitors? In some exceptional cases they will, of course. In fact we have the authority of Mr. Riis for saying that "Boss Tweed" was, at one time, a resident of the "slums," but the physiological rule is inexorable, that the offspring of these people will be like unto those who begot them. Such being the case, is it not frightful to contemplate the mentally and physically gnarled and twisted masses of humanity that are called into being and cradled by the slums?

Those of us who have given thought to the subject are thoroughly convinced that good health is at the bottom of good citizenship, and the master minds of recent times have all united in proclaiming the first and most important duty of the State to be a regard for the health of its citizens. Drunken parents and idiotic children have now come to hold the relation of cause and effect almost, in the minds of those who have given study to the subject, and the Biblical visitation of the sins of the parents upon the third and fourth generations has come to be physiologically understood in the light of latter-day sanitary research.

Such being the case, cause and effect being so well understood, it seems appalling (with the full meaning of the word) to the sanitarian to contemplate the outcome of the origin of life under such conditions.

Urban life is, at best, an unnatural life; nature does not, in her economy, contemplate the life of a large and crowded city for her children, and, for this reason, does it become necessary, from a sanitary point of view, that artificial safeguards must be thrown around the residents of cities. It may be, and no doubt is, a fact that, to a certain extent, low life, depravity, vice, filth or sanitary neglect is a necessary evil of community of life on a large scale; the history of the world would seem to point this way; such being accepted, it would be chimerical to hope for an Utopia, but that the avertible evil of such pest-spots may be prevented, eternal vigilance is a prime requisite. This unsleeping vigilance is, we are glad to learn, the pre-eminent attribute of the health administration of New York, and the citizens of that metropolis have but little conception of the blessings they owe to that efficient and vigilant branch of its municipal administration.

It is not New York City alone that is afflicted with this cancerous spot, so to speak. Every large city, every small city, every town, aye, even the village has its pest-spot, its low life, its filthy section, wherein all the laws of hygiene are continually set at defiance. I have seen in the coal-mining town of Shenandoah, in this State, down in the quarters where herd the Poles and Hungarians, filth and insanitary conditions far more pronounced even than I have found them in the "Five Points" of New York; but as one selects his largest cattle and his most beautiful poultry for the county fair, so do we take the metropolitan city of our country as a type by which to picture the evils attending the tolerance of "slums" in our midst. That which we find prominently in New York, because of the prominence, in every way, of the city, do we find even more marked proportionately, in nearly every artificial community in our land. Every aggregation of human beings is cursed with the presence of a class who, setting all the laws of hygiene at defiance, are a constant menace to the sanitary welfare of the community. The greater size of the *cancer* in New York, because of the greater size of the body upon which it is engrafted, has so forcibly called attention to the disease that very energetic measures have been instituted to check its progress and retard its growth; in smaller communities the people have not yet awakened to the fact that it is possible for them to be afflicted with just as great or even greater (proportionately) plague spots than those which afflict their gigantic brethren. Tom Thumb was just as liable to cancer as was Hercules. So far as size was concerned his smallness of stature conferred upon him no immunity from disease.

[TO BE CONTINUED.]

A Morbid Viennese Custom.

It appears (says the *Medical Record*) that a somewhat morbid custom exists among the Viennese of having the dead bodies of children and other persons dear to them photographed, and for this purpose the corpse used to be taken to the photographer's studio. The attention of the sanitary authorities having been drawn to the danger of the dissemination of infectious disease by this practice, a decree has been issued by the Austrian Minister of the Interior absolutely forbidding the photographing of corpses in studios open to the public, and the photographing of bodies of persons who have died of any infectious disease by professional photographers, even in private houses. Exception is made of cases in which such photographs may be required for police or medico-legal purposes. In the case of persons who have died of non-infectious disease, the corpses may be photographed at the private residence of the deceased, subject to the approval and on the responsibility of the medical official whose duty it is to verify deaths.

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EDITORIAL.

Cremation of Garbage.

"REMEMBER, man, that thou art dust, and unto dust thou must return," are words pronounced by the Catholic priest, when, on Ash-Wednesday, at the inauguration of the penitential season, he makes the sign of the cross upon the forehead of the faithful, with ashes, the dust of wood.

It has always seemed to us that there is much more than merely a religious significance to these words; a world of philosophy, a volume of wisdom, the essence, almost, of hygiene can be evolved by the contemplation of these few simple words.

Recognizing man as the highest type of organization, the highest conception of an organic body, and understanding dust as the most remote visible elements of organic formation, we can readily understand that everything organic must come from, and be ultimately again resolved into, dust. Man (speaking of him from a material point of view only) is an aggregation of organic elements, of dust; so, also, is a potato, or a cabbage, or a cow, or a chicken.

It is, we might say, the phenomena dependent upon the changes in the relation of organic elements that constitute what we call life. Without nourishment man cannot live, and it is because dust or organic elements are taken into his system and there appropriately apportioned that he is enabled to see, to think, to hear, to move—in a word, to live. A cabbage lives just as truly as does man; dust, we might say, really is alive; it has with it not only the living, moving, active germs, both harmless and harmful; it carries with it not only the living, invisible agents by whose labors the phenomena of nature are accomplished, but it has also in its possession the elements that are capable of producing, when placed in proper position, the very highest conceivable manifestations of organic life—human existence. If we understand dust in its true and broad conception—if we recognize it, as we should, as an aggregation of organic elements, whether floating in the air or as the soil of the earth; if we break away from the commonplace idea of dust as a something to be brushed from the furniture; if we take the scientific view of the question—then we readily understand that dust is the basis of life.

If, then, life springs from dust, and if we remember that the manifestations of life imply the disintegration of that which has given rise to these manifestations, then do we understand that the ending, like the beginning, of organic life must be dust. To be more accurate, however, we must remember that there is no such thing as the *ending* of organic life. In the pre-Adamite days there was just as much organic life in the world as there is to-day, and to-day there is no more or no less than there will be at the end of time.

God made man from matter, we must remember; He did not, at the time, call this matter into existence; He merely so arranged and combined the matter, or dust, then existing and imbued with organic life, that living man was the result.

Therefore, we are ready to understand that a man is, really, but a combination of organic elements, of dust, of elements that had life before the man in whom they now are, was, and that will continue to have life after they have departed from their present human combination.

For illustrative purposes we might, almost, assume two forms of organic life—a life of aggregation and a life of disintegration. Let us view the aggregative life as that by which the completed animal or plant has been gradually evolved, by selection and combination, from the original simple elements of organic nature; and the disintegrative life as that whereby the completed, perfected organism, having served its purpose, is once more dissolved into the original elements from which it has been evolved.

To get down to the purpose for which we are writing this editorial—to demonstrate the utility of garbage cremation—we must first of all recognize clearly the fact—for *fact*, unquestioned and unquestionable, it is—that the disintegrative life of which we have spoken is attended with conditions diametrically opposed to the proper performance of function of the aggregative life, which is the life that we are now all living and that we want to live in health and comfort.

It matters not whether it be animal or vegetable that is undergoing the life of disintegration, the conditions are inimical to the heal hy human aggregative life. "Garbage" is a collection of organic matter undergoing the life of disintegration; a cabbage or potato, growing in the ground, is living the life of aggregation, and there is nothing injurious to human health therein; but this same cabbage or potato, in the slop-bucket, is living a disintegrative life, and is producing conditions unfavorable to human health.

It was never intended by nature that man should congregate together in the artificial life of communities; he was meant to commune with his fellow-man, unquestionably; but to do so as does the farmer or the resident of the country. So long as man so lived, the disposal of garbage was an easy question. The quantity was so slight in comparison with the forces of nature that the natural processes of the disintegrative life of the garbage took place in accordance with the laws of nature.

But with the artificial crowding together of humanity in towns, villages and cities, artificial conditions, not provided for in the economy of nature, have arisen, and they must be provided for by some artificial device, else health will suffer.

The "slop-bucket," the "swill-tub" or "the garbage-receptacle" is one of the artificial nuisances of civilization (which really means a perverted nature), and it must be met, or health will suffer. For the aborigines, for those nomads who know not fixed habitations, who wander from place to place, for those who live in small communities, nature can cremate their garbage. The disintegrative life of garbage is, really, a process of burning or cremation. But nature is very deliberate in all her movements; she has no sympathy with nineteenth-century-sixty-miles-an-hour haste; she works thoroughly but slowly; hence, when garbage accumulates in great amounts, as is always to be found in artificial communities, the natural cremation of nature is not sufficient to properly dispose of it, and it becomes necessary to resort to some artificial means to efficiently dispose of an artificial accumulation.

If we are going to make garbage at a "limited-express" rate, we must dispose of it equally rapidly, else health will suffer.

But, can we do so? Unhesitatingly and emphatically, *yes*. If there is one question upon which sanitarians are united more unanimously than another, it is in the recommendation that garbage should be cremated; not only the garbage of communities, but of individual households.

Experimental research has, at last, succeeded in presenting to us furnaces that are perfectly satisfactory, and there is now no longer any excuse for garbage accumulation, and the contamination of the atmosphere thereby, beyond ignorance, apathy or willful disregard of the mandates of science.

Garbage (meaning by this refuse of all kinds, from an elephant to a microbe) can be satisfactorily burned, so that the process will be neither unpleasant nor unwholesome, and the ashes resulting from this combustion possess so much value for fertilizing purposes that the cremator will be able to earn a considerable sum toward its maintenance.

"Garbage cremation" is now an established factor in sanitary science, and it should at once become an established factor in the hygienic economy of any and every well-regulated community.

Argument is hardly necessary to prove the *correctness* of a *fact;* hence, without the consumption of any more space in argument, we would assure our readers that "successful garbage cremation" is a *fact* that it will be well for them to recognize without further delay.

Wind in the Bowels.

A PATIENT recently complained to us that she had, the night before, been annoyed by "wind in her bowels," and when we remarked that this was all wrong and needed attention, she replied that she had been so troubled for years, but never supposed that it amounted to anything, or had any special significance.

This, we believe, is a very prevalent error. "Wind in the bowels" is an everyday occurrence, and no heed is paid to it. Judging by the odor that frequently assails our nostrils in crowds, it is almost universal. It is wrong to suppose that this condition has no significance, for it means much.

Wind means gas, and gases in the bowels mean one of two things—indigestion or constipation. We must remember that a goodly portion of the process of digestion takes place in the bowels; if this process be not perfectly carried on, the food that should have been digested putrefies, and, in the process of putrefaction, gases are liberated therefrom. Again, one may have a movement from the bowels every day, yet it may not be thorough. Constipation is a relative rather than a positive term; some of the refuse matter may be left behind, and this residue, undergoing putrefaction, will liberate gases. Hence, "wind in the bowels" is a condition that, while not alarming, yet calls for attention, and it should not be so lightly regarded as it usually is. It may mean serious disease, and it may indicate only a very easily removable condition, but it certainly should be looked into and not be passed, unheeded, by.

Hotbeds of Disease.

THE article on this subject, the first installment of which we present in this issue, has been prepared by the editor from his personal observations during a tour through the slums of New York, both by day and by night. The illustrations are from flashlight photographs made especially for this article by gentlemen who accompanied the editor on his trip. The illustrations of the next portion of this article will be very striking.

Hemerobaptistæ.

IN our last issue we argued strongly for the unlimited use of water, and we rather held that cleanliness was not, justly, next to godliness, but that it was, in reality, an integral part of holiness.

We were not then aware of the fact that nearly two thousand years ago there existed a Jewish sect whose sole distinguishing religious characteristic consisted in the daily bath.

Because of their frequent ablutions the name of "Hemerobaptists" has been sometimes given to the Mendæans, but we have the authority of Epiphanius, of Hegesippus and of Justin Martyr for asserting that a distinct sect of Jews existed, known as Hemerobaptists, with whom the daily ablution was an essential part of religion. In the *Clementine Homilies* we find John the Baptist spoken of as a Hemerobaptist, and as we read we earnestly sigh for a similar sectarian revival in these *civilized* days of small water mains and enforced economy of this health-giving fluid.

Poisoning by Wild Parsnips.

Cases are reported from time to time of poisoning by eating wild parsnip. Dr. Frederick B. Power, of Madison, Wis., has been investigating these and similar cases (*Pharmaceutische Rundschau*, July, 1891), and finds that it was not the wild parsnips (*Pastinaca sativa*, Lin.), but the water hemlock or spotted cowbane (*Cicuta maculata*, Lin.), the eating of which gave rise to the poisonous symptoms.

NOTES AND COMMENTS.

Our Sleeping Apartments.

The average man of fifty has spent 6,000 days, or nearly twenty years, in sleep. Will not the contemplation of this fact cause us to realize the importance of ventilation in our sleeping-rooms?

Manufactured Eggs.

The contribution which the hen makes to breakfast possibilities (*Medical and Surgical Reporter*) would seem hard to imitate, yet it is freely stated in English journals that the industry of manufacturing eggs has attained large dimensions in that country, and, further, that the manufactured article is for most purposes as good as the genuine.

For the Prevention of Baldness.

It is recommended (*Med. Record*), for the prevention of baldness, that the hair be kept pretty closely cropped, and that the head be bathed frequently in salt water and lubricated occasionally with a very small quantity of vaseline. About two teaspoonfuls of salt to a pint of water will make a tonic of the proper strength, and with this the head should be bathed at least three times a week.

Hygienic Communion Service.

A novel feature in the communion service has been inaugurated in the Scoville Avenue Methodist Episcopal Church of Cleveland, Ohio. It has been customary in the Methodist Church to give communion wine to all partakers from one cup. On the ground of "decency, good taste and holiness," the pastor furnished each member, who attended the service recently, with a separate cup. There were seventy-two in all, and the cups would not go around, so some of them had to be washed.

An Explosive Boy.

A warning to mothers who believe in "flogging" is contained in the experience of a 12-year-old boy, up in the State, who was recently almost killed by a little chastisement by his mother while he had in his hip-pocket several boxes of toy-pistol percussion caps.

When the boy got home his mother was waiting to punish him for disobedience. She struck him across the hip-pocket where the caps were. An explosion followed, and when the smoke cleared away the boy stood there without a stitch of clothing on him and with his hips and sides horribly burned. The explosion tore his clothes completely off and scattered fragments of them all over the room.

Warm Water in the Treatment of Insomnia.

Dr. Altorfer (*Journal de Medical de Paris*) recommends a plan of producing the sedative effects of a warm bath, which can easily be carried out. He recommends that the loins be wrapped in linen cloths which have been dipped in lukewarm water. These cloths are covered with a water-proof sheet so as to prevent evaporation. The whole is retained by a flannel bandage so that all loss of heat is obviated. The author claims to have obtained surprisingly good results from this simple method of treatment.

The Prevention of Lead-poisoning.

M. Lavrand, according to the *English Druggist*, has found that the administration of pills of iodide of iron, either alone or with phosphide of zinc, is an efficient remedy to prevent or arrest lead-poisoning in those who work in white lead. The author found that although his patients continued to work in positions where they were likely to suffer, they improved in general health. The peculiar earthy complexion and anæmia characteristic of saturnism disappeared under their use, and the amount of hæmoglobin increased.

The Efficacy of Vaccination.

Another witness, of the experienced and practical kind, to the efficacy of vaccination, is Dr. Edson, of the New York Board of Health, who says that, "During nine years' service in the health department of New York I have never seen a case of smallpox in a person who had been successfully vaccinated within five years, and the number of cases I have seen mount into the hundreds. During that period I have seen only one inspector of contagious diseases contract smallpox, and he was the only inspector who disbelieved in vaccination, and refused to have it performed on himself."

The Virtues of Cold Water.

Bulwer Lytton, the father of the Lord Lytton who has just passed away, was a profound believer in the efficacy of the water-cure for everybody, but in particular for overworked literary men. Whenever he was tired out and felt the need of recuperation, he would go to a water-cure establishment for a few days, drink water in unlimited quantities, and be sweated and soaked until he had lost half-a-dozen pounds in weight. When he felt sufficiently reduced he would go back to business or pleasure, generally with a horrible cold, but under the conviction that he had been greatly improved by the treatment. He even wrote a pamphlet or book on the subject, in which he assumed the ground that water would cure anything if a man only took enough.

While we do not thoroughly agree with Bulwer Lytton, we yet have great confidence in the practically unlimited use of water, both internally and externally. We have not much faith in *systems*, but we have unbounded reverence for the bath-tub and the water-pitcher.

Neuralgia of the Fourth Toe and Tight Shoes.

Dr. Thomas G. Morton, of this city, has called attention to a neuralgic condition of the fourth toe, characterized by pain at the base of the toe, which in severe cases may radiate up the leg. It may be of a dull character, or it may be throbbing and extremely severe; it occurs spasmodically, and in the intervals there is immunity from pain. The hygienic interest of this affection is to be found in the fact that it seems to be not infrequently caused by the wearing of tight shoes. If the disease has not lasted too long, it will generally yield to rest and the use of unusually broad-soled shoes.

Adaptability to Circumstances.

The development of new capabilities to meet new conditions is well illustrated by the asserted fact that since the use of wire netting for fences in Australia, the rabbits have developed a new nail that enables them to climb the fences with neatness and dispatch ; while a similar newly-developed appendage allows the animal to burrow under the netting, unless it is buried at least eight inches under the surface of the ground. If the above, which we note in the *New York Medical Times*, be true, it evidences how wonderfully accurate, in their adaptation to needs, are the phenomena of nature.

Evils of the Quick Lunch.

More rows are caused in the business world by indigestion than even the doctors know anything about. Our business men rise in a hurry, eat breakfast in a hurry, and then hurry down town. Toward 1 o'clock they rush out, get a dose of underdone beef, the half of a mince pie and a cup of strong coffee, and hurry back to their offices, feeling as if they would like to fight somebody. Someone comes in who has lunched on the same style of victuals, and, in the same haste, to discuss a plain business proposition. The two are feeling cross and sour and get to quarreling. Each thinks the other a crank, and both are wrong. It was the lunch.

Burying Without Coffins.

Whatever may be said against cremation, nothing can be said in favor of boxing up our dead, like sardines, by which we delay the inevitable return of the body to the dust from which it has come. Nature and her forces are denied complete and free access to the body that is encoffined, and the resolution of the body into its original elements is thereby retarded. We must remember that a dead human body is "of the earth, earthy," and that its ultimate destination is to become part of the earth. Prince Lucien Bonaparte, who recently died, and who was a very learned and wise man, seemed to have the true conception of the destiny of his body, for at the bottom of his grave was laid a mattress, and upon this his body was deposited to be covered with earth. We can see nothing revolting to sentiment about this method of burial, and, from a hygienic point of view, it is decidedly preferable to the coffin.

Sunday Funerals in Philadelphia.

For many reasons we can assure those who are interested in sanitary reform that they have the hearty sympathy of Archbishop Ryan, of the Archdiocese of Philadelphia, and that, whenever required, they can count upon his earnest co-operation. The latest evidence of this fact we note in the order issued against Sunday funerals, which provides that *no permits* will be issued *for funerals* to take place *on Sundays, except in cases of extreme necessity.*

When, by reason of death from contagious disease, it is necessary to permit the interment of a body on Sunday, only a hearse or wagon and not more than three carriages will be allowed to enter the cemeteries.

Raising Children in Bran.

This method was proposed by M. Pue at the *Société Normande d'Hygiene Pratique.* It consists of a cradle which has the wooden bottom taken out, and is then lined with a strong cloth. In this is placed sterilized bran to nearly half a yard in depth. A hair pillow is used. The baby has only a short flannel shirt on and is naked from the navel downward. It is covered with a woolen blanket, and a wool-lined dress is kept to put it in when taken up for nursing. It has thus full liberty of movement in all its limbs, while its dejections pass at once into the pure bran, keeping the child dry and clean, even if there is diarrhœa. This method is a cheap one, the bran not costing as much as diapers.

A Home-made Barometer for the Rheumatic.

It will be of interest to those of our readers who are rheumatic or neuralgic, and who are obliged thereby to be regardful of atmospheric changes, to know that they can make a barometer out of a window pane or the wall paper, by painting them with any one of the following solutions:

No. 1.—Chloride of cobalt, 1 part; gelatine, 1 part; water, 100 parts.

No. 2.—Chloride of copper, 1 part; gelatine, 10 parts; water, 100 parts.

No. 3.—Chloride of cobalt, 1 part; gelatine 20 parts; water, 200 parts; nickel oxide, .75 parts; chloride copper, .25 parts.

In damp weather all will be colorless; in clear weather No. 1 will be blue, No. 2 yellow, and No. 3 green.

The Importance of Care of the Stomach.

A healthy, well-ordered stomach is really at the bottom of all human health and happiness, for since the stomach is the laboratory wherein is prepared the nourishment, the working force, for the system at large, it must be evident that the whole system will participate in or be influenced by the good or faulty action of this important organ. The liver is most intimately associated with the stomach, indeed it seems hardly possible for either of these organs to be deranged without the implication of the other. Consumptives are said to be hopeful (says Dr. S. Weir Mitchell, in *The Century*), but the sick liver predicts damnation. A learned divine said a thing of extraordinary wisdom when he announced that no man, however secure he may be in mind as to his future life, ever dies a triumphant death with disease below the diaphragm.

Immunity of Jews from Tuberculosis.

Dr. G. A. Heron has just published a work on "Evidences of the Communicability of Consumption" (Longmans). He dwells upon the immunity from tuberculosis of carefully-conforming Jews, whose meat is inspected in a manner which would require the rejection of the entire carcass if any speck of tubercle were discovered. Dr. Heron believes that about four per cent. of the animals slaughtered for food in Great Britain are more or less affected by tuberculosis. He admits that there is probably no room for doubting that a complete sacrifice of the infected animals, such as would be required by the law and practice of the Jews, or even in some Gentile communities in which an inspection of meat is rigidly enforced, would become, by the diminution of disease which it would bring about, a distinct source of saving to the public.

Oysters and Typhoid Fever.

While we do not believe in creating unnecessary alarm, yet it is our duty to chronicle all that may be advanced in reference to the causation of disease; hence do we note that it is claimed in England that the son of the Prince of Wales contracted the disease from which he has recently suffered by eating oysters gathered from beds poisoned by sewage. In consequence of this scare the consumption of oysters in London has fallen off one-half. Our own belief is that the danger which this story relates is exceedingly problematical, yet it suggests to us the self-evident fact that the oyster, like anything else that is permeated with sewage, is not fit for human consumption. In our own country oyster-beds are usually located quite remote from centres of civilization, hence the popular bivalve is very unlikely to be contaminated by sewage.

Removal of Garbage.

The subject of the removal of garbage is receiving a good portion of discussion. Don't remove it, any portion of it, so the smell of its decay will come back. It is a big undertaking for a big city to remove its garbage in such a way that it will give no offense. Dumping it in a water-course, on a lake or sea, is not getting rid of it to all purposes. In the first case it will wash down and become a pest about another town. In the second or third it will wash back to shore and breed a pestilence there. The surer way to handle garbage is to destroy it. It can then hurt no one, as it has no existence. Piled up in almost any place it will find some way of giving off the evils of its decay to the injury of someone. Destroyed, placed out of existence, it is gone, and there is nothing left. No one will be offended by it, and no means are left whereby it can come into the home or whereabouts of the people. It may not be the best way to serve garbage, but it is a safe way, and at the present time we know of no other that will prove any better.—*Sanitary News.*

The Calla Lily as a Vegetable.

Certainly, man has variety enough to chose from to-day in making up his *ménu.* Our paternal government does not seem to think so, however, for the Department of Agriculture is about to introduce to us a new vegetable in the shape of the root of the calla lily.

Farmers in Florida have begun to raise these calla roots for market. The plants grow readily in swamps, and so thickly that the yield of a single flooded acre is enormous. They reproduce themselves by the multiplication of their bulbs underground, so that the grower has simply to dig up the offshoots and leave the parents to propagate anew. For centuries the Egyptians have cultivated a similar crop during the seasons of the Nile overflow, and at the present time calla lily bulbs are a common vegetable in Japanese markets. So prolific and palatable are they that their propagation in many parts of the United States, where conditions are favorable, may reasonably be looked forward to as an agricultural industry of the future.

Eyesight—Its Care During Infancy and Youth.

Dr. L. Webster Fox contributes a timely paper on this subject. In conclusion he formulates ten rules on the preservation of vision:

(1) Do not allow light to fall upon the face of a sleeping infant.

(2) Do not allow babies to gaze at a bright light.

(3) Do not send children to school before the age of ten.

(4) Do not allow children to keep their eyes too long on a near object at any one time.

(5) Do not allow them to study much by artificial light.

(6) Do not allow them to use books with small type.

(7) Do not allow them to read in a railway carriage.

(8) Do not allow boys to smoke tobacco, especially cigarettes.

(9) Do not necessarily ascribe headaches to indigestion; the eyes may be the exciting cause.

(10) Do not allow the itinerant spectacle vender to prescribe glasses.

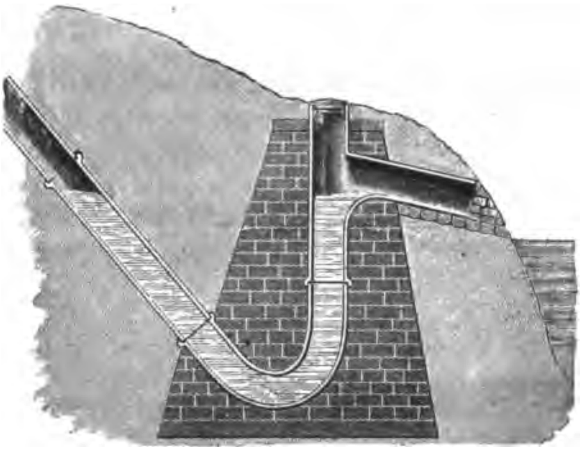
Milk a Microbe Killer.

The results of Dr. Freudenreich's experiments, as now published in the *Annales de micrographie*, are of the greatest importance. He finds that the cholera bacillus, if put into milk drawn fresh from the cow, dies in an hour, and in five hours if put into fresh goat's milk. The bacillus of typhoid fever takes twenty-four hours to die in cow's milk, and five hours in goat's milk. Other microbes suffer a like fate in varying periods. By this showing, fresh milk is a bactericide or killer of disease-causing micro-organisms. But Dr. Freudenreich's researches go yet further than the foregoing. He finds that milk maintained for an hour at a temperature of 55° (131° F.) loses its power to kill microbes—a statement which is of interest in face of the common teaching which makes the purification of milk depend upon its being boiled.

Again, the microbe-killing properties of milk become weaker the older it gets. Cow's milk after four days, and goat's milk after five days, cease to have any effect upon micro-organisms. The conclusions, at any rate, are altogether in favor of the consumption of fresh milk.—*Br. and Col. Druggist.*

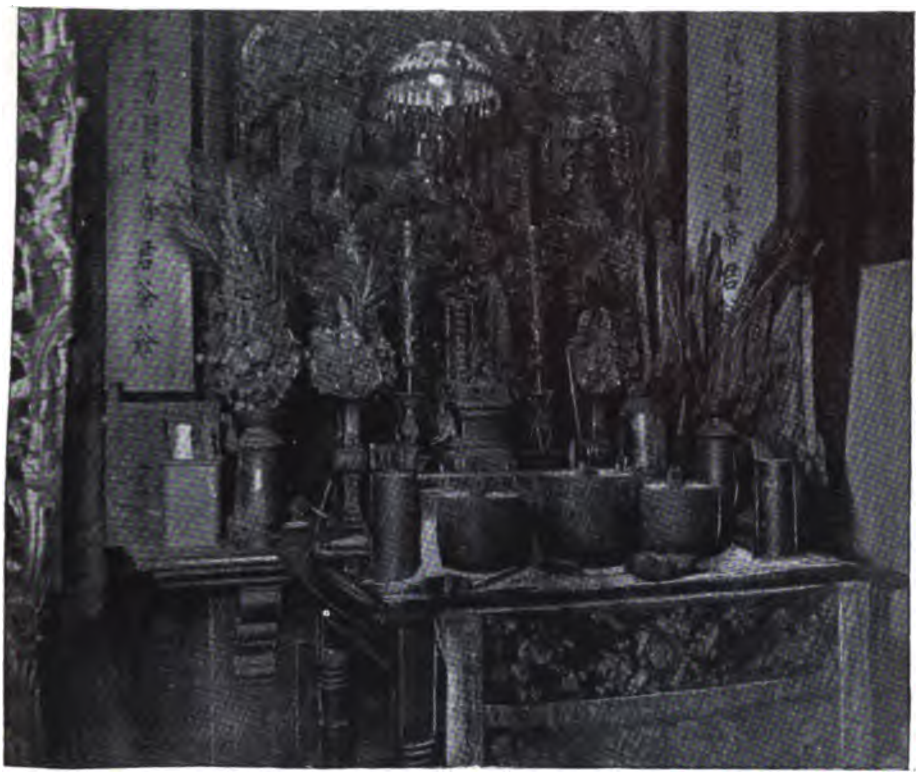
Improved Sewer and Drain-pipe Outlet.

Sewers and other drain pipes, emptying into rivers and streams, whose banks are unstable, frequently cause the washing away of the bank to an extent to injure the pipes or obstruct the outlet. To obviate this difficulty the improvement shown by the accompanying illustration has been invented and patented by Mr. James H. Elliott, of the city engineer's office, Memphis, Tenn. A suitable abutment is constructed near the outlet, and the main drain-pipe enters this abutment at an incline, then bends upward to a point near the top of the masonry, when it again bends outward, to discharge the flow into a paved gutter above low-water mark. The vertical portion of the pipe is also continued upward to the surface, where it has a removable cover or grating to facilitate inspection and cleaning. The water always remaining in the lower bend of the pipe is designed to break the force of a rushing torrent, and prevent violent outflow, the masonry or concrete wall holding the pipe permanently in place.—*Scientific American.*

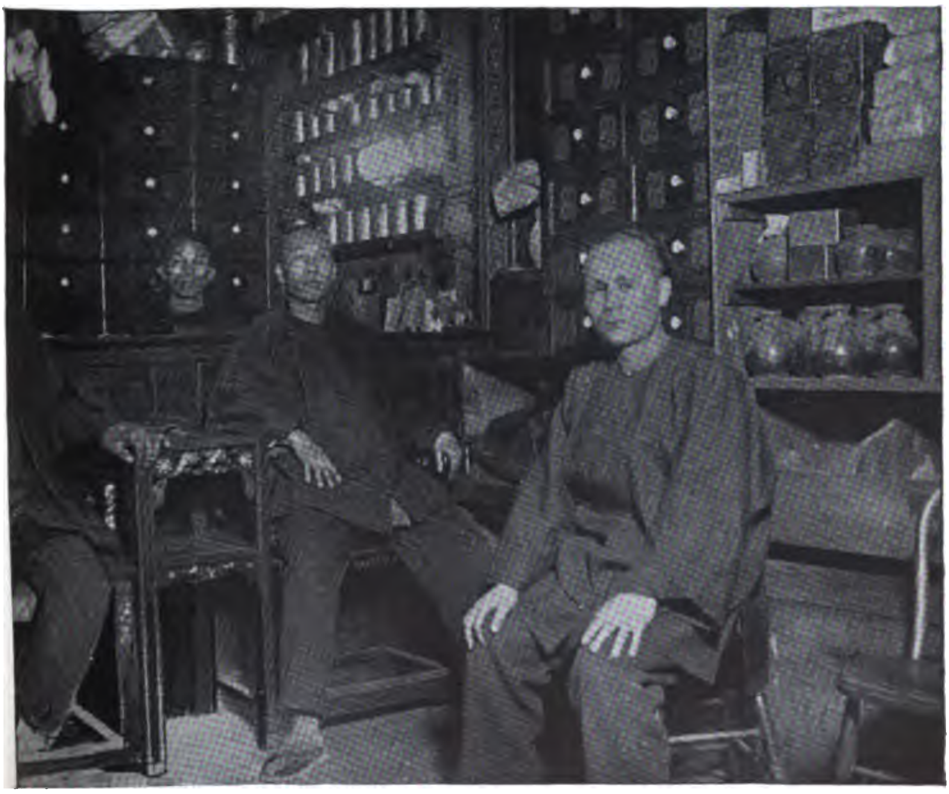


Science in Bread-making.

At the recent annual meeting of the American Chemical Society, the question of the value of carbonate of ammonia as a leavening agent in bread, or as used in baking powders, came up for discussion. The consensus of opinion was in favor of the employment of ammonia. It was stated as a fact that ammonia rendered the gluten of the flour more soluble, and that the bread in which this action was produced by carbonate of ammonia must be more digestible, and hence more healthful, and because of the extreme volatility of



Chinese Joss House.



A Chinese Merchandise Store in Pell Street.

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carbonate of ammonia and its complete expulsion from the bread in the process of baking, it is one of the most useful, most healthful and most valuable leavening agents known. These conclusions are borne out by the elaborate experiments made by Professor J. W. Mallet, of the University of Virginia, which show that bread made with a baking powder in which one per cent. of carbonate of ammonia is used is more wholesome, because the ammonia serves to neutralize any organic or lactic acid present in the flour.—*Sanitarian.*

Why Cigars Are Harmful.

In a paper entitled "Some Points in Negative Therapeutics," Dr. G. Walter Barr (*Therapeutic Gazette*) writes as follows concerning cigars and their effects upon the nervous system:

The physiological action of nicotine is well known, and because it is a powerful substance when taken into the animal economy, it is like the notoriously bad boy charged with all the trouble that occurs in the neighborhood. Several years ago I was struck with the intense results of a little cigar-smoking on my nervous system, and with the fact that these results varied very much in details from the physiological action of nicotine as reported by all authorities. This caused me to study the secrets of the cigarmaker's art and the different kinds of cigars from a physiological standpoint.

Cigars are popularly divided into two classes—"good" and "bad." Each of these classes, or rather all cigars, are properly divided by the initiated into two other classes—flavored and unflavored. The most popular cigars, and, consequently, the ones most often called "good," are the flavored ones; connoisseurs look with contempt on all flavored cigars. At least nine-tenths of the cigars sold in the United States are flavored, and I am confident that I am correct in stating the general principle, that *it is not the tobacco, but the flavoring additions to the cigar that are harmful, in a practical sense, to the nervous system and digestion of man.*

The substances most used as flavoring adulterants of cigars are valerian, tonka and Jamaica rum. . . . The quantity of each drug in one cigar is very small, indeed, but when smoked, the action of the drug is far out of the usual ratio of dose to effect. . . . The total effect of a highly-flavored cigar is to depress the action of the stomach and liver, slow the heart, produce a feeling of languor, and a headache between the eyes, dull to sharp, according to susceptibility. The effects depend for intensity on the quantity of flavor and the susceptibility of the person to its action. Many persons not accustomed to their use can bring on all the symptoms of a torpid liver—loss of appetite, coated tongue, constipation—by smoking a few flavored cigars. The same persons can smoke a dozen unflavored cigars a day without in the least degree producing this effect. Flavored cigars tend to retard digestion; unflavored cigars do not. The effect of flavored cigars on the nervous system is much greater than that of unflavored ones.

The moral is, cause the man whom smoking is injuring to quit smoking *flavored* cigars, and in most of the cases you will accomplish all you desire.

The real difficulty is to distinguish flavored cigars. No reliance whatever can be placed on the word of the average salesman, as I have clearly determined by experiment. Many of them depend on the statements of the manufacturer's agent to them, which are very unreliable as a rule. The best method of testing is to draw through an unlighted cigar in a reverse direction,—the end usually lighted being in the mouth,—and then the presence of flavor can usually be determined by the practiced taste. All cigars which leave on the bottom of the box a brown stain are flavored, but the reverse does not obtain. A box of cigars may be flavored so as to deceive experts, but this is an extreme case. If the physician be not a judge on this point himself, he may get a friend engaged in manufacturing the weeds to pick out the few brands of unflavored cigars—of another's manufacture—sold in the town, and recommend these to clients who will smoke.

There is no unadulterated chewing tobacco, smoking tobacco, or cigarette; the users of these abominations may be deflected to cigars sometimes.

Life-shortening Occupations.

The *Medical Age* contains the following abstract from the *Journal of the American Medical Association*:

One of the curious features of modern life is the extent to which the most hazardous trades are overrun by applicants for work. The electric light companies never find any difficulty in obtaining all the linemen they need, notwithstanding the fact that the dangers of that kind of business have been demonstrated times without number. The men who work in factories where wall paper is made frequently joke one another over the tradition that a man's life, in this trade, is shortened ten years. A similar belief is prevalent in factories where leather papers are made, and among men who have to handle them, and whose lungs are said to become impeded by inhaling the dust arising from such papers. In certain other factories, where brass ornaments and fittings are made, the air is laden with very fine brazen particles, which are, when inhaled, especially irritating to the lungs. But one of the most singular advertised calls for employés that was ever printed appeared recently in a Connecticut newspaper, signed by a firm engaged in the business of building towers. It called for applicants only among those who are young, strong and courageous, and closed by saying: "We warn all seekers for this job that it is of the most dangerous nature, and that few men continue in it more than a few years. In fact, it is almost certain death to the workman who follows this occupation."

A SOLUTION of bichloride of mercury is about the best material for taking indelible ink out of linen.

A GENTLEMAN was complaining on 'Change that he had invested a large sum of money in stocks and lost it. A sympathizing friend asked him whether he had been a "bull" or a "bear;" to which he replied, "Neither; I was a jackass."

Dead Sea Water as an Antiseptic.

The *Daily News* Paris correspondent gives particulars of an interesting communication which has been made by M. de Chauveau in the name of the well-known Pasteurian chemist, M. Lortel, who has long thought of turning the most accessible part of the Dead Sea into an Asiatic Runcorn, studying how, with a siphon, to bring to the top water from the bottom which is heavily charged with calcium salts and bromide of magnesium. Another of his ideas was to export water from the Dead Sea as an antiseptic for use in hospitals, it being reputed mortal to every kind of animal life, and necessarily, as he supposed, to microbes. But a savant whom he consulted said, "Take care; there is hardly a fluid in nature in which a virulent microbe of some sort may not find a good soil." He therefore cultivated various kinds of bacilli in the densest Dead Sea water that had ever been fetched to his laboratory. The diphtheria, measles, scarlatina, smallpox, and other fell creatures of the animalcular world were experimented upon. All died but two, with which in forty-eight hours the fluid was alive. The one shaped like the clapper of a bell, and the other like a tack nail with a round head, were the microbes of tetanus and of gangrene.

Drinks in Fevers.

Elderly persons tell surprising stories of the old-time fear of giving cold water to fever patients. This has long since passed, and they now are permitted to drink freely. Still further than this, starting principally from the theoretical consideration that the poisonous products of the action of disease-producing bacteria in the infectious diseases may be got rid of by washing them out, a few physicians have tried the administration of drinks in very great quantities—much more than the patients would voluntarily call for. For instance, Dr. Valentini, of Königsberg, directs the nurses to give the typhoid-fever patients milk, bouillon and water in quantities that would appear impracticable if mentioned. In addition to it all he has latterly given 200 grams of sugar of milk dissolved in a liter of water as a food and to increase the diuretic effect.

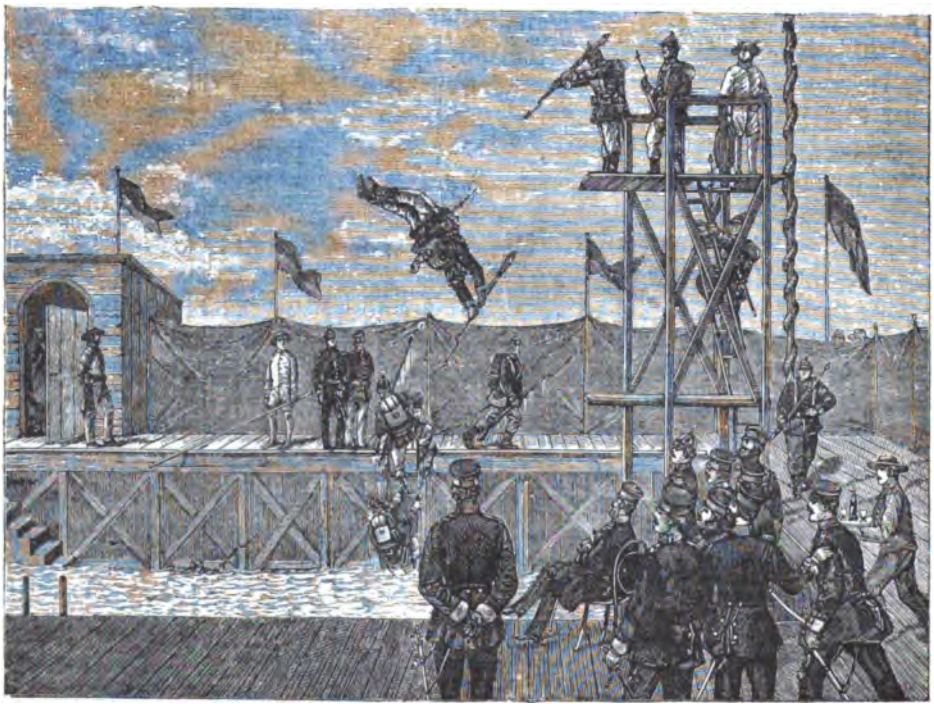
The results, we are told, are surprising. The concentrated renal secretion is diluted and increased, and, even at the acme of the disease, its quantity is maintained at much above what is usual in fever. In milder cases the diuresis is kept somewhat above the normal. The patients were more comfortable than before the beginning of the treatment, and all the cases terminated favorably. —*The Sanitary Inspector.*

Music as a Therapeutic Agent.

Canon Harford, of London, has formed a guild for the purpose of testing systematically the influence that music may possess in the treatment of disease. The objects of the guild are set forth as follows: (1) To test by trials made in a large number of cases of illness the power of soft music to induce calmness of mind, alleviation of pain, and sleep. (2) To provide a large number of musicians specially trained to sing and play the very soft music which alone should be administered to those whose nerves are weakened by illness. These musicians should be in readiness to answer promptly the summons of a physician. (3) To hire or build in a central part of London a large hall in which music shall be given throughout all hours of the day and night; this music to be conveyed by telephone attached to certain wards in each of the chief London hospitals. (4) To obtain opinions and advice respecting the classes of illness in which music is likely to be most beneficial, and to collect and record all reliable accounts respecting permanent benefit that has followed the use of music. The work of sending musicians to hospitals and infirmaries has already commenced, and it is intended to continue the experiments long enough for a definite conclusion to be arrived at as to the services which music is likely to render to the sick. Well-known members of the medical profession are said to have expressed a favorable opinion of it.—*New York Medical Times.*

The German Army Swimming Exercises.

While the swimming service is obligatory on the pioneers, and lately also on the cavalry, it is optional with the members of the other departments of the army, and the fact that the annual subscription list is always more than full is a pleasant indication of the love of sports among our "Blue Boys." Many an enthusiastic admirer of Neptune must, to his great sorrow, be turned away on account of the great number of applicants.



The instruction is given, under the direction of lieutenants, by under-officers. It begins with the regular practice of the swimming strokes, the pupil being supported meanwhile by the so-called "fishing rod." When he has learned the movements well enough to be able to support himself above the water, he begins to swim on a loose line. At this stage it is often found that those for whom the highest hopes had been entertained lack one quality that is indispensable for a good swimmer; we mean that Olympic calm without which the most carefully acquired knowledge of the stroke is useless. When the pupil is able to keep himself on the surface safely and quietly, he must go into the water without the helping line, but a rod is placed a short distance above his head for use in case of need. After this he must submit to the test of swimming alone for fifteen minutes, then for half an hour, accompanied by a boat, and then comes the "Todtenfahrt" (death trip), which lasts an hour.

The swimming exhibitions held at the end of the summer before the commanders of the battalions or regiments are pleasant festivals, and those held in Berlin or Potsdam are often attended by any princes of the reigning house who happen to be in the neighborhood. Classes of men clad only in their swimming tights exhibit their proficiency in swimming, jumping and diving, and this water exercise in regularly formed lines, squads and sections is a pleasant sight. Lastly comes the most important feature of the program—the exhibition of the finest swimmers in full marching uniform and with bayoneted guns in their hands. They jump from a high tower into the cool water, on the surface of which these fully armed sons of Mars amuse themselves until the command of the officer in charge calls them from the damp element.

The swimming service of the German army is an excellent institution, for, besides giving the men healthy exercise, it tests the courage and self-control of the men in time of peace.—*Illustrirte Zeitung*.

Milk and Typhoid Fever.

Dr. Vincent, physician to the Geneva Board of Health, has just published a careful report on the typhoid epidemic which raged in that city last spring, particularly in the Quartier des Paquis. He succeeded in tracing the outbreak to the milk with which the people in general, and the inhabitants of that quarter especially, were supplied. The most culpably negligent and untidy system of cleansing the milk cans prevailed; indeed, in one extensive dairy he saw a milkman spitting on his hands in order to lubricate them for the scouring process to which he presently subjected the inside of these receptacles. Another source of the mischief was found in the carelessness with which the watering of the milk was practiced—any water, pure or impure, being reckoned suitable. He strenuously urges on all who wish to escape the risk of contracting typhoid to boil their milk, and to see it done themselves. Milk sold as already boiled had not, in many cases, been properly boiled at all. The most perfunctory methods of boiling he found in constant practice. The moment the milk began to stir in the boiler and to bubble a little it was regarded as boiling and taken off the fire! Even had the boiling point been adequately reached, he insists that the milk should still be kept on the fire for some minutes, if it is to be made perfectly innocuous. On the present system he thinks the microbes it is sought to destroy have every chance of surviving and of propagating their kind to increased activity.

Roller Skating.

In view of the fact that the roller-skating craze has again become epidemic in different parts of the country, we should fail in our duty to the public did we neglect to point out some of the dangers to health arising from overindulgence in this fashionable amusement. Some years ago, when this craze first struck us like a cyclone, a writer in the Boston *Medical and Surgical Journal* reported nine cases, all girls between the ages of 9 and 16, in whom excessive roller skating seemed to have produced disorders from which girls of that age should be entirely free. The New York *Medical Record*, and other journals also, called the attention of physicians to this at that time, requesting them to carefully observe the effects of roller skating upon boys and girls and report the results of their observations. We are convinced that, when indulged in to excess, as it is apt to be, it is highly injurious, not only because of the overstrain on certain sets of muscles, but because the air of the skating rink is thick with bacteria-laden dust. We hope, therefore, that parents will heed this timely warning and not allow their sons and daughters to wantonly endanger their health, as thousands of young people are now doing, but remember the old adage, that "an ounce of prevention is better than a pound of cure." It is at or about the time of puberty that the greatest caution is needed, lest seeds be sown from which life-long misery shall be the harvest, but the danger by no means ends with youth.—*Pacific Medical Journal.*

Eating to Live.

Shelley was a vegetarian and an idealist. Perhaps, if he had been a meat-eater, his verses would have displayed more passion and fire, for the contrast between his poetry and Byron's is striking, though Byron attributes his best work to the inspiration of gin and water. Byron's life is a melancholy example of how soon the candle that is lit at both ends burns out. Byron's horror of corpulence drove him to dietetic expedients to avoid it that certainly tended to shorten his life, such as chewing tobacco to stave off hunger and the desire for food, and other questionable methods. Had he lived in these days he could have been told how to keep down fat and still live well and enjoy most of the luxuries of life.

Walter Scott passed a genial, social existence, took plenty of exercise, lived temperately, and insisted on having seven or eight hours sleep out of the twenty-four; hence he lived to a good age, and did more work—that bears in every page of it the impress of genius—than any man of his day. Burns, his equally gifted countryman, lived to eat and drink, and hence the result. It is true, that he left poetry behind him that the world will not willingly let die; but what might he not have done? The high, strong nervous system of the poet and literary man bears excess badly, and Swift seemed to know this, for in a letter to Pope he says:

"The least transgression of yours, if it be only two bits and a sup more than your stint, is a great debauch, for which you will certainly pay more than those sots who are carried dead drunk to bed." The machinery of sensitive souls is as delicate as it is valuable, and cannot bear the rough usage that coarse customs inflict upon it. It is broken to pieces by blows which common natures laugh at. Equally when we descend into the lower regions of Parnassus, the abode of talent and cleverness, the care of the body is absolutely essential to long life and continued usefulness. He who lives by his intellect must take care of his stomach, for, after all, "mind is matter, and soul is porridge."

The Influence of Graveyards on Public Health.

Dr. J. W. Carhart, of Lampasas, Texas, has written a paper on this subject, in which he drew the following conclusions:

From whatever standpoint this subject is approached, it must be with care and gentleness, since the graveyard, though a constant menace to public health, had a pseudo-sacredness fostered by the profoundest sentiment of our nature.

The method of the disposal of the dead should be founded on reason, and not on custom or sentiment.

The interment of the dead in the earth was never enforced by a statute, Jewish or Christian, and was merely incidental to both dispensations.

No law, human or divine, requires us to dispose of the dead in a manner prejudicial to the health and comfort of the living.

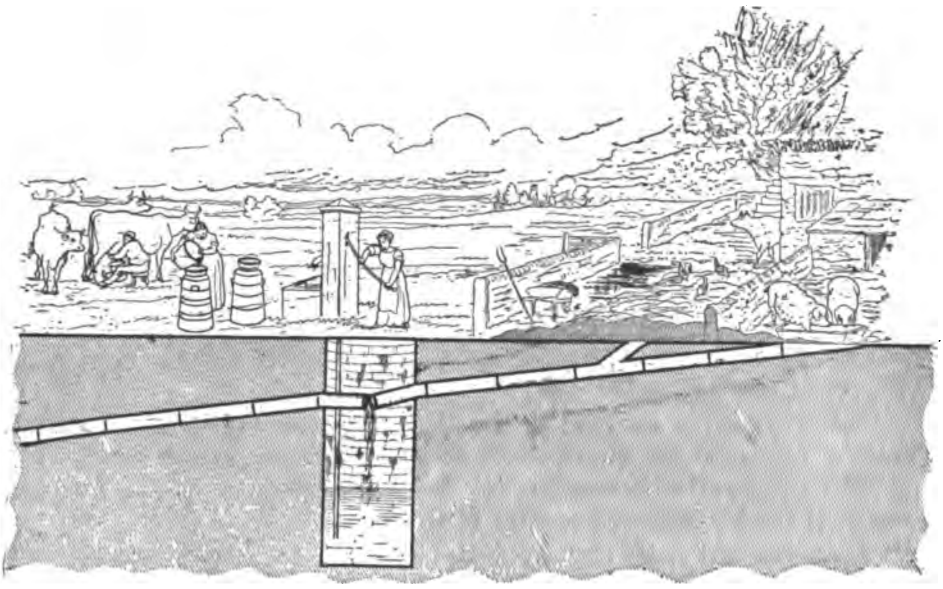
While it might be an open question as to the right of the State to decide as to the manner of the disposal of the dead, unless in exceptional cases, it was clearly the province and duty of the State to prevent such disposal as would in any wise jeopardize the interests of the living.

From all the facts at our command, we were led to the conclusion that the graveyard should become a thing of the past, and that incineration was the method most in accordance with science, sanitation, æsthetics, reason and religion.

He would add, as a corollary to these several conclusions, that, since the intelligent, broad-minded physician was the almost exclusive guardian of public health, in seeking to prevent the development and spread of disease, it was plainly his duty, when cemeteries were being located, to use his best endeavors to have them so placed as to jeopardize as little as possible the public health; and for its moral effect he should encourage efforts to beautify existing cemeteries, and that he should seek, as fast as possible, without too much violence to the tender sensibilities of the masses, to encourage incineration of the dead, or some other method more in harmony with sanitary science than the common modes now practiced.—*Medical Age.*

Milk and Typhoid Fever.

There can be no question, in the light of present-day knowledge, that the milkman is, not infrequently, a purveyor of the seeds of typhoid fever. If there is one article that ought to be more scrupulously guarded against the possibility of pollution than another, it is milk, for reasons that are obvious. The retail milk dealer is not always aware of the quality of the milk that he is serving; neither always does the farmer know of the harm that he is, unconsciously, doing. Ignorance is at the bottom of much of the polluted milk that is sold in our large cities. The dairy farmer needs enlightenment; as a rule, he is an honest man, who does right to the extent of his knowledge, but, of our own personal knowledge, we know how ignorant the average farmer is of all that pertains to hygiene. Legislation will help toward, but it will not secure, pure milk; the two essentials for which are that the consumer shall be willing to pay a fair price for the article, and that the farmer be instructed in the elements of hygiene. The dairy farmer must know that if he washes his milk cans with impure water, his milk will be befouled, and if drainage from the pig-stye or farmyard gains access to his well or spring his water will be foul. If the next generation is to be the grown-up babies of to-day, and if the milk producer is to nourish these babies, then no greater work can occupy the wise men of the nation than the instruction of the dairy farmer in the elementary principles of hygiene. Our illustration (from Mr. T. Pridgin Teale's work) shows one way in which the farmer's well may be polluted.



ONE CAUSE OF TYPHOID FEVER.

THERE are 208,749 railroad bridges in the United States, spanning 3,213 miles.

Examples of Longevity.

Murray E. Poole, of Ithaca, N. Y., contributes some interesting notes to *The Philadelphia Press* concerning old persons of past times, from which we learn that Thomas Parr, commonly called "Old" Parr, was aged 152 years and some months when he was presented to King Charles I, in the year 1635. This old man was born in 1483, and died (sixteen years after he was presented to the king) at London, November 24, 1651.

About the same time the Countess of Arundel presented to the queen a midwife 123 years old.

John James died in July, 1705, in the County of Northampton, England, aged 128 years.

Francis Secardi Hougo, surnamed "Huppazoli," died January 27, 1702, aged 114 years, 10 months and 12 days, at Smyrna, where he was consul for the Venetians. He was born March 13, 1587, at Casal, in the Monsterrai, when Sixtus V held the See of Rome. He wore the cassock in the time of Paul V and Urban VII, which he quitted to marry, at Scio, in the Archipelago, the daughter of a certain nobleman, surnamed Capra. He left behind him forty-nine children by five lawful wives. At 100 his white hair appeared black, his beard and eyebrows were changed to the same hue at 112, and having lost all his teeth at 110, he cut two large ones in his upper jaw one year before he died.

Matthew Littard, called La Ronce, or the Brier, died November 19, 1702, at the village of Vendeville, in Lorraine, at 118 years of age; he had served in the wars in Italy, in the reign of Henry IV of France.

Catharine de la Croix, died in October, 1708, in the Lionnois, aged 113 years.

Jean Carriere, died January 16, 1709, near Langres, France, aged 116 years.

Augustine Galand de Savignac, died April 16, 1709, in Auvergne, France, aged 115 years.

The curate of Safierot, in the Pais de Caux, France, died July 17, 1709, aged 116 years.

Nicholas de Bezanes died November 28, 1709, near Issoudun, France, aged 107 years.

The wife of Sagonne, a notary, at Margaux, in Medoc, France, died October 3, 1709, aged 116 years.

John Mensard, died January 3, 1710, near Dun-le-Roi, in Berry, France, aged 110 years. He had ten wives.

The Sieur De Roque, advocate, near Agen, France, died January 6, 1710, aged 111 years.

Guilleaume Delabat, died February 8, 1710, at la Fleche, France, aged 111 years.

Michael Fortin, died April 17, 1710, at Vimontier, in Normandy, aged 116 years and 4 months.

The Countess Cowper, presented to Queen Anne, in February, 1711, a woman 128 years old.

Jane Schrimshaw, in the parish of Bow, England, married, in 1711, at 127 years, Edward Corken.

Dom Cornelius, in 1593, professed at Saint Sophia, near Boisleduc, lived ninety-six years in the same place, and died, aged 118 years.

Domne Michelle Montorsier, a professed nun, of Gannay, near Bethune, died in 1516, aged 118 years.

Æsthetic Dress a Factor in Children's Discomfort and Disease.

When Oscar Wilde, at the suggestion of Whistler, the artist, undertook a crusade against the ugliness then prevailing in Philistinia, and preached the gospel of beauty in dress, he did a good thing for England and America. Soft fabrics, light in weight, and suitable as drapery for the human form divine, took the place of heavier textiles that the essentially refined relegated to house-furnishings alone. Women gradually became ornaments in the landscape, instead of animated blots upon it. The decrease in the weight of their robes literally lifted from their shoulders and waists a great burden. But what about hapless childhood? What about the babies?

In the Whistler Wilde æsthetic movement followed Kate Greenaway, with a series of pictures illustrating child-life of a nature calculated to penetrate the hardest heart. Every dear little maid possessed a large hat and a long gown, such as the household grandmothers wore in the ages known as long ago, and every tiny lad appeared in a long coat all buttoned down before, like classic Old Grimes. To the casual observer the combination was of the kind known as "too sweet for anything." Very soon, babyhood at large erupted into long garments and large hats the instant it could walk. Not very steady on its legs, owing to its extreme youth, babyhood had a bad quarter-hour whenever the wind blew. The skirts of coat or gown wound themselves around the poor little shaky limbs, the hat went up and down on one side, or both, and life lost some of its legitimate joys. But babyhood was not to be thus undone. It grasped the hat firmly with both hands, kept its little head in as good a position as circumstances would allow, turned in its toes and tottered forward. In time, babyhood learned how not to be jarred or knocked down by the wind—learned the lesson so well that the forward totter became its natural gait, to the destruction of grace, proper breathing and muscular force. Some of these æsthetic babies are now just on the verge of approaching manhood and womanhood. They cannot breathe, stand or walk well. They lack grace and firmness of movement. Certain energies were early sapped by a style of costume that transformed natural movements into contortions. The twig was bent and the tree deprived of the freedom that rational oversight can secure. This permanent totter has its admirers, like many other deformities in and out of savage lands.

A New England spinster of many virtues recently remarked, with kind intent, to a New York girl, brought up *sans* heels, *sans* long skirts, *sans* big hats, *sans* everything that could in any way impede the natural movements of the body: "You hold yourself a trifle too straight. The Boston young women bend a little forward."

Then hapless infancy must submit to another infliction, and that is, white as the prevailing tone of its surroundings, unmodified even by the blue that spares somewhat the tender eyes of foreign infants who are dedicated to the Virgin. The well-bred baby has a white gown, is wrapped in a white cloak, tucked beneath a white blanket, in a perambulator protected from the sun's rays by a white-lined parasol. This is also "too sweet for anything." In winter the dazzling white of the snow is added to the general glare, and the baby winks and blinks in discomfort and steadily acquires bad muscular habits. The only prescription for this particular cruelty is to compel the parents to recline with upturned faces in the full glare of the sun, underneath a dome of white, surround them for several hours with a sea of white objects, and gently bounce them over unfriendly curbstones, if possible. One month of long garments and broad hats for the fathers would banish æsthetic dressing from babyland forever.—*Medical Record.*

Sewage Experiments at Frankfort-on-Main.

The experiments here recorded have been carried out during the past three years, at the Frankfort works, under the supervision of a commission consisting of Dr. Spiess, Mr. Lindley, Dr. Libbertz and B. Lepsius. Certain of the results obtained have been already published, and an account of the work is there given. In all, eight series of experiments have been conducted, with five different systems of clarification. The various processes investigated were as follows:

(*a*) Precipitation of sulphate of alumina and lime. Series I to III.
(*b*) Precipitation with lime alone. Series IV.
(*c*) Simple deposition, without chemicals. Series V.
(*d*) Precipitation with sulphate of iron and lime. Series VI and VII.
(*e*) Precipitation with phosphoric acid and lime. Series VIII.

The volume of sewage dealt with was about 30,000 cubic meters (6,600,000 gallons) per diem, and upward of 1,000 complete and comprehensive analyses were carried out.

In its mean composition the Frankfort sewage, though considerable fluctuations were observed, does not differ materially from that of other towns, London, Paris, Dantzig, Berlin and Breslau, with which it is contrasted in a special table. By means of a set of graphic diagrams are shown the results of the various purification processes, as evidenced by the character of the effluent as compared with the raw sewage, and the author sums up the general effect of the different modes of treatment. In all cases the suspended matters were far more efficiently dealt with than those in solution, and the appearance of the sewage water, as tested by the eye alone, was greatly improved.

In dealing with the amount of organic matter present, special consideration is given to the phosphoric acid treatment, and a graphic diagram is appended to show the proportion of the phosphates removed at each different stage of the process, and carried off in the effluent. From this it appears that though all the added phosphoric acid is expended in enriching the sludge, the amount of phosphoric acid present in the deposit from untreated sewage is nearly twice as great as is that in the sludge from the phosphate process. The figures in milligrams per liter are as follows:

PHOSPHORIC ACID ORIGINALLY PRESENT.

(1) In raw sewage	67.4
(2) Added to secure precipitate	17.6
Total	85.0

PHOSPHORIC ACID AFTER TREATMENT.

(1) In deposit in sand chamber	29.4
(2) In sludge	17.4
(3) In effluent	38.2
Total	85.0

Hence, instead of securing a sludge valuable for agriculture, more than twice the quantity of the phosphoric acid employed for the precipitation is carried away in the effluent, viz., 38.2 milligrams per liter, of which about half is in suspension and half in solution. The author points out that from this point of view it would be better not to treat the sewage with phosphate of lime at all, but to clarify it by simple deposition, and then to add the phosphate to the sludge.

In conclusion, it is stated that the experiments have demonstrated that the effect of chemical precipitation is not so greatly superior to the purification obtained by simple deposition in tanks as to warrant the adoption of any of the above processes in preference to simple mechanical treatment. This, of course, does not hold good for sewage treatment generally, but it applies only to the conditions prevalent in the present works. It is proved, however, that in every case where tanks approaching the dimensions of those at Frankfort are available, more especially where the length of the tanks is equally great, it is possible to obtain, by purely mechanical means, results comparing favorably with the clarification attained elsewhere in tanks of smaller size only by means of chemical treatment, and therefore at a greater cost.—*Scientific American.*

How Women Should Live.

I think it is too little understood that mental habits have an enormous value in deciding the physical condition. A heart and brain dissipated in frivolous detail, in idle gossip, in flaccid introspection, in empty trivialities, rarely engender an imposing personality. The body feels the dispiriting effect of the regime. Fools have drooping shoulders, a wandering eye, cannot fix their attention, are egotists, tremulous and uneasy. The mind well stored, inquiring, awake, seems to give the poor body poise and repose. The brain requires nourishment from without as well as from within, and nourishment that assimilates. Superficial culture rants and roars, and makes itself heard, is exhaled in froth and endless bombast. Deep culture lies silent, slips about inoffensively, broods in the blood, which it warms and invigorates. Mental sloth, the want of a vital interest, is the curse of half the women in the world. In the same way the physique tells upon the intellect. No good work can grow out of exhaustion, no fertility, no flash of Protean fire or of genius, from nerves unstrung, jaded and jangled. But the invalids are obstinate. A confirmed dyspeptic once swallowed in my presence five raw bananas just before a meal to which he naturally came without enthusiasm. I timidly ventured, when he complained of his lack of appetite, . . . "The bananas." He replied, glaring fiercely, "Fruit agrees with me."

There is the young woman who pulls in her belt until her face is purple, and then goes to the doctor for a physic or skin lotion. You mildly suggest, "Lacing." "Oh," she simpers, "it never hurts me. I *can* breathe."

To appeal to a woman about her health has long ago proved useless in these matters, but every woman is jealous of her beauty. A tightly-laced girl may be lovely at 18; she will be hideous at 30. Why will not the physicians touch and awaken the chord of vanity? But the doctors are dull or careless. They give a pill where they should loosen a string.

A physician was once heard to admit he could not discover the complaint of a blooming flower of fashion who was yet constantly in his hands. I could have told him, for I had seen her getting herself into her gown that morning. And how ungraceful, how lacking in all voluptuous *abandon* and forceful elegance, the moments of these strapped automatons, not to mention the red nose, the roughened complexion, and the startled, pained eyeball!

Then as to the diet. A day begun with heavy, farinaceous food drowned in rich cream and sugar, it would indeed take the Scotchman's hard field-day to digest. The short walk or drive and long session in hot rooms of our city routine leave such a meal heavy on . . . the soul.

How much wiser a cup of tea, a crisp bit of toast, quite sufficient nourishment for the opening hours of an artificial day.

At noon there should be a hearty repast, a light soup, a chop, some green vegetables, an orange. No sweets, no wine, if the figure's lines and the skin's purity are valued. A cup of tea and bread and butter at five are permissible to such persons as dine very late. They insure a lighter dinner, and this is sometimes an advantage. Then at the ball nothing hould be touched, unless, indeed, a sip of bouillon. Hot suppers are superfluous. The hunger of the small hours can be easily appeased, on the return, by a glass of fresh milk and a biscuit. Upon this diet the most immured *mondaine* need never fear that horrid aspect of "a diner-out."

Then exercise! How abused and neglected! Three miles a day of walking are enough, and not too much, or a horseback gallop of six or eight miles. To be out in the air twice during a day is well, but never, never, never to over-fatigue one's self. Once is too much. Once has broken a constitution.

The Roman ladies knew the tonic of the bath. Lollia Paulina and Poppæa Sabina prized their charms. The warm bath at night, the cold-water sponging in the morning—great beautifiers these. Another matter of vital importance is the living in rooms not overcold, for a habitually chilled skin can never be fine—but fresh and well ventilated. The large, blazing heat of the open fire is very desirable as compared with the death-trap of the hidden register.—*From " Healthy Heroines," by Julien Gordon, in Lippincott's Magazine.*

The Influence of the Weather.

There are a great many people who say that the weather does not affect them at all; but the weather does affect everybody, writes Dr. Kellogg. When the barometer goes up our spirits go up, and when the barometer goes down our spirits go down. When the barometer is high we get more oxygen and the vital fires burn brighter, and when the barometer is low the reverse is true. It is no wonder that a person subject to rheumatism or neuralgia feels these changes in the weather with particular force. When the barometer rises the skin does more work, and when the barometer falls the skin does less work. When the skin does less work the kidneys, liver and other excretory organs have to do the work.

But the changes in the weather are exactly what we need as stimulants to the system, and the reason why people who live in tropical climates lack in vigor and wilt down quickly under diseases is that they have none of the bracing effects which come from the changes of temperature.

These may be called a species of physical gymnastics. It is exactly like living a sedentary life in a climate in which there is no change.

Strength and the Hair.

During the past few weeks the discussion as to abundance of hair being evidence of strength, has again come up, some arguing that there was nothing novel in Samson's strength being in his hair, and others that as a rule the strongest men are least blessed with an abundant hair covering. There are necessarily exceptions to all rules, but most freaks of strength of modern times have luxuriant hair. There are five or six women now traveling with dime museum shows, lifting enormous weights with their hands and teeth, and performing other extraordinary feats of strength, and nearly all of them have magnificent heads of hair. Among prize-fighters the same rule applies, and although athletes generally keep their hair cut very close to the head, they usually have a very thick growth of hair and are seldom bald. Ancient history is delved into a great deal in the discussion, but the fact remains that the strongest men of to-day have in almost every instance not only heavy heads of hair, but also quite a substantial growth on the chest and arms. It may be that excessive bodily vigor and activity promote the growth of hair, or that the hair itself is an evidence of strength; but whichever may be the cause and the effect, the combination exists as a very general rule.

SPECIAL REPORTS.

State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania.

PRESIDENT,
J. H. McCLELLAND, M.D., of Pittsburg.
SECRETARY,
BENJAMIN LEE, M.D., of Philadelphia.
PEMBERTON DUDLEY, M.D., of Philadelphia.
J. F. EDWARDS, M.D., of Philadelphia.
J. H. McCLELLAND, M.D., of Pittsburg.
HOWARD MURPHY, C.E., of Philadelphia.
GEORGE G. GROFF, M.D., of Lewisburg.
S. T. DAVIS, M.D., of Lancaster.
BENJAMIN LEE, M.D., of Philadelphia.
PLACE OF MEETING,
Supreme Court Room, State Capitol, Harrisburg, unless otherwise ordered.
TIME OF MEETING,
Second Thursday in May, July and November.

The International Congress of Hygiene.

(Continued from page 628, December issue.)

THIS was Monday, August 10, and on the next day, at 10 o'clock A.M., the real business of the Congress began. The work was wholly done in sections, of which there were ten, named as follows:

(1) Preventive Medicine.
(2) Bacteriology.
(3) Relation of Diseases of Animals to those of Man.
(4) Hygiene of Infancy and Childhood.
(5) Chemistry and Physics in Relation to Hygiene.
(6) Architecture in Relation to Hygiene.
(7) Engineering in Relation to Hygiene.
(8) Naval and Military Hygiene.
(9) State Hygiene.
(10) Demography, Health Statistics, Industrial Hygiene.

It was, of course, a physical impossibility for one man to hear all papers presented. He must select what he was most interested in, and leave impressions of the rest to be obtained from printed accounts. Sections 1, 2, 4, 9, 10 were the most popular, but all were well attended. Indeed, it was remarkable, considering the many attractions which London offered, to find the section meeting so fully attended at all times, and whenever any subject of general interest was up there was hardly standing room.

But while the papers were interesting, the discussions upon them were more so. Doubtful or "cranky" notions were criticised unmercifully. The Congress intended to be careful, and not indorse, even by silence, things which had not been carefully investigated. But if papers and remarks were most critically examined, they were most courteously received. The audience was, of course, largely English, and, if a true sample, then English audiences are most delightful to a speaker who has anything to say. It is always a support to a speaker to have the points he makes seen and audibly approved or disapproved. American audiences are getting more and more into the absurd habit of thinking it shows uncultivation to be demonstrative. The effect of the frequent hear! hear! or no! no! of an English audience has to be experienced to be appreciated.

It was a novel sight to an American to see a "live lord" get up to read a paper or discuss one. It dispelled the idea that English noblemen do nothing but attend horse-races or play baccarat.

In Section 4, Infancy and Childhood, the subject of school hygiene received great attention. Indeed, anything which touched the school question was given careful consideration. Public schools in England and on the Continent are of comparatively recent growth, that is, such schools as are open to poor as well as rich, but they have been going long enough for all to see that they can be made most powerful agents for good to the State. The idea that all that is needed for a successful school are a room, teacher and books, receives little support, at least in England; and all the speakers at the Congress who touched upon it indicated their belief that pure air and attractive rooms and suitable means of physical exercise are not simply desirable, but necessary. A most attractive feature of one session was a class in physical culture from one of the London Board schools, as their public schools are called. To an American, and especially to a reader of Dickens, anything under a "Board" is regarded with disfavor. He immediately thinks of Oliver Twist and the "Board" which dealt with him. But an acquaintance with the London School Board soon dispels such ideas. Certainly its chairman, Mr. J. R. Diggle, has no resemblance to Mr. Limbkins, and a visit to the school board offices on Victoria Embankment shows that London has a live public school system under most efficient management.

A most animated discussion took place over the question as to where the work of the State should stop in dealing with poor children. Upon the ground that an ill-fed child cannot be educated, some, notably Mrs. Besant, the "Theosophist," maintained that food as well as instruction should be furnished in the schools in the poorer districts. Others as stoutly argued that such help would simply make the parents more degraded than at present; in short, as their opponents claimed, their position was that poor children must be allowed to starve as discipline to their fathers and mothers. Incidentally, facts were brought out, showing a state of poverty and degradation among the poor of London and other English cities almost beyond belief.

In bacteriology no absolutely new principles were propounded, but old ones were examined. Neither Pasteur nor Koch was present, but frequent references were made to each, and their friends, at such times, applauded their names after the manner of our political meetings, when "favorite sons" are named. The questions of immunity from infectious disease, and the destruction of microbes within the body, were ably handled. It was very noticeable how it was taken for granted that bacteria are responsible for many diseases. That question is settled. How to destroy them is now the inquiry, and not only how to destroy them, but also neutralize the poison they generate. Some animals, as is well known, never have certain diseases, and cannot be inoculated with them. Thus, inoculate a dog or cat with anthrax virus, and it will have the disease, but not so a rat. A sheep never has tubercles. Its blood is in some way deadly to the bacillus which causes them. Discover the secret of this, and you cure the disease. It has been generally believed by bacteriologists that the deadly matter was always a product of the microbe itself, and Koch's tuberculin is prepared on this principle. But at this Congress several men eminent in the science claimed that certain "defensive proteids" are generated in the blood-cells of different animals, and that by the study and separation of these the best results are to be obtained in the cure of microbe diseases. The general feeling as to Koch's consumption cure was one of disappointment; but Professor Ehrlich, who is closely associated with Koch himself, claimed that, by improved methods of preparation and more careful use, most wonderful results, not yet published, have been obtained.

The relation of disease to drinking-water, and the importance of bacteriological examination of water were dwelt upon. But it was properly insisted upon that it was the kind rather than the number of bacteria which makes water dangerous. The fallacy that if a single sample of water does not contain bacteria of disease, therefore a given water supply has no relation to an epidemic, was well exposed by Professor Fodor, of Buda Pesth. He cited an example in his own district where, in a town supplied with pure mountain water, an alarming epidemic of typhoid fever raged. It seemed impossible for the water to have been polluted, for it was brought under ground in pipes direct from its source to the town fountains. More than a hundred samples, too, were examined before a sign of the bacillus was obtained. Finally a culture was found which undoubtedly was the typhoid bacillus. The pipes were now examined, and a leak was found where they passed near the house in which one of the first cases originated. Tests showed that the drainage from this house escaped into the pipe, and all was clear.

In the section of Preventive Medicine, the alcohol question came up, introduced by a paper by Sir Dyce Duckworth, one of the physicians to the royal family. He spoke of "our (England's) miserable national pre-eminence in the abuse of alcohol." He did not believe that total abstinence was necessary, but honored those who practiced it. The aking of any alcoholic liquid, except at a meal, and then not more than an ounce to an ounce and a half in twenty-four hours, he totally condemned. Even this amount, he said, was sometimes hurtful, and only permissible to an adult.

The discussion was most animated. And anyone in the United States who fondly believes that in Europe there is the happy condition of free alcohol, and no abuse or attempted interference with the "rights" of the people, should have heard that discussion. The curse all saw; as to the remedy there was a difference of opinion. The power and duty of the State to interfere were practically unquestioned, and some form of local option generally advocated. One enthusiastic American delegate claimed that high license solved the problem in his State, but he was unable to make it clear just how making a monopoly of it could prevent its abuse, and, like his statement that "the Maine law was a failure," it seemed to rest on his own authority, and to be like some of the newspaper stories in war times, which were headed "important if true." The important point seems to be that in every foreign government the alcohol question is assuming serious proportions, and much thought is being given as to the best way of dealing with it.

But these are only "brief notes," and must be brought to a close. The working hours of the Congress were from 10 A.M. to 2 P.M., and, outside these, many attractive entertainments and excursions were offered. The Congress badge would admit one to all important palaces and exhibitions, and each afternoon a garden party, and each evening a conversazione kept all well occupied. The Queen was at Osborne, Isle of Wight, and a select few were invited to an "audience" with her there. With all this, at the end of the week most of the members looked as if they had been attending anything but a health congress.

Undoubtedly, the two "swellest" entertainments were the garden party given by Mr. and the Baroness Burdett-Coutts, and the conversazione given by the Lord Mayor and Corporation of London in the famous Guild Hall. It is a risky thing to arrange for a garden party near London, on account of the liability of rain, but all those arranged for the Congress were favored with the best of weather.

No description need be given of Holly Lodge, the charming home of Mr. and the Baroness Burdett-Coutts. It is enough to say that it remains in the mind of the Maine deleate as the nearest thing to perfection in house and grounds that he ever expects to see. The beautiful walks, the shady nooks, the patches of lawn here and there—and such a velvety lawn, too—made an impression never to be effaced. He should not forget to mention also the quiet grace of the Baroness, or the cordiality of her husband which was especially manifested to all the American delegates. Certainly, in becoming an Englishman by adoption, he has not forgotten that he was an American by birth.

The Guild Hall, where the Lord Mayor and Corporation of London received the Congress, is a historic old building which has recently been much enlarged by a modern addition. It dates from about 1400, but has been so much repaired and added to that little of the structure of that date remains. It contains countless halls and court-rooms and picture galleries and museums, all of which were crowded with the members of the Congress and the leading society people of London. The Lord Mayor and the Lady Mayoress, in their brilliant state robes, seated upon a raised platform, received the guests, and uniformed attendants waited at every door to guide strangers and explain the things they saw. Bountiful refreshments were, of course, provided, and toward midnight some showed evidence of having, as expressed by a delegate to the "Pan-American Congress," "schwumed in champagne."

These two entertainments were the most elegant, but no more enjoyable than some others less pretentious—notably, the garden parties of Sir Edward Saunders, Sir Spencer Wells and Lord Wantage, and the conversaziones at the Royal College of Surgeons, Royal College of Physicians and South Kensington Museum.

The sermon to the Congress, by Canon Farrar in Westminster Abbey, was a fitting close to its labors. The celebrated preacher seemed almost inspired as he stood under the vaulted roof of that building so sacred to the whole Anglo-Saxon race—if not to the whole world—and eloquently proclaimed that such work as the Congress had been doing was true Christian work and such as the Great Master would bless.

As to the results of the convention, they were many and important. The chief of these was the powerful impetus it undoubtedly gave to all sanitary measures abroad. We are, perhaps, too far away and sent too few delegates to feel it much. But not only during the meetings, but for days after their close, the leading papers in the great European capitals were devoting both news and editorial space to the questions which the Congress had discussed. Public opinion abroad is, perhaps, harder to arouse, but when aroused is less easily quieted than with us. It is also much more impressed by large meetings, because they have fewer of them.

There is, too, so much national jealousy or military suspicion of each other among the nations of Europe that each is fearful lest the other get some advantage. Does a great meeting announce that the people of any country are degenerating? Then its soldiers will not be so vigorous, and something must be done. When these things are considered, and also that they do things abroad more thoroughly than we do, it will not be surprising if the next few years witness an amount of sanitary progress in Europe far exceeding that which any even long period preceding can show.

C. F. Robinson.

Influence of Surroundings in Producing Insanity.

In the last number of the *Journal of Medical Science* Dr. Savage discusses this question, and begins by protesting against the acceptance of what is a too widely spread notion, viz., that nearly all insanity is the outcome of direct neurotic inheritance. The influence of heredity is not denied or minimized, but the great importance of environment is insisted upon. To quote the words of the author: "We are what we are in mind and body, to a great extent, as organic results of our forefathers; but that we are no longer naked savages is some evidence that progress and development in the individual and the race may take place as the result of changing surroundings." There can be no two opinions as to the encouragement to be got from such a view. A too great insistence upon heredity as the determining cause of insanity must land us in a hopeless pessimism as regards treatment; whereas a recognition of the influence of surroundings is the first step toward the construction of a reasonable and efficacious system of therapeutics. The author also cites many examples of hallucinations and delusions which are suggested by surroundings; and while all will not be inclined to accept his dictum, that disorder of function may lead to disease of tissue, there will be few who will not share his opinion as to the efficacy of restful, pleasant surroundings in the treatment of mental disorder, as compared with the virtues of "medicine out of a bottle."

To remove a wart, cover the skin around the wart with lard; apply over the surface of the growth one or two drops of strong hydrochloric or nitric acid; then keep the part covered up until the scab separates.

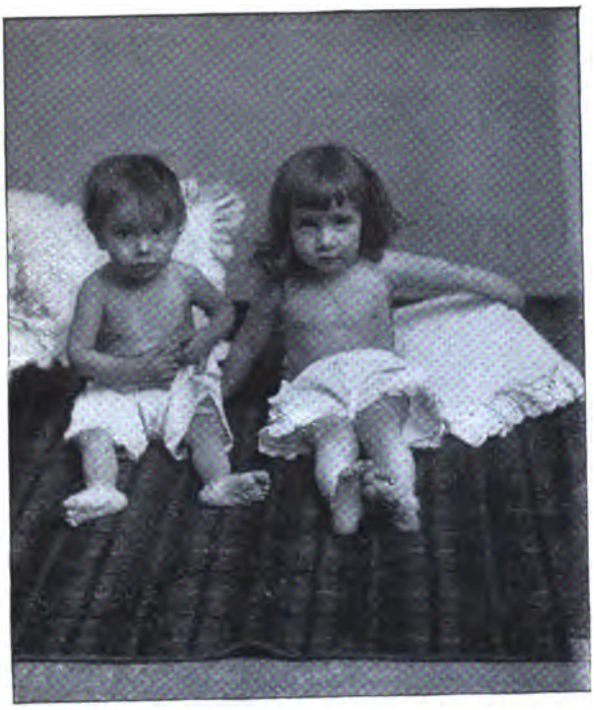


FIG. 1.

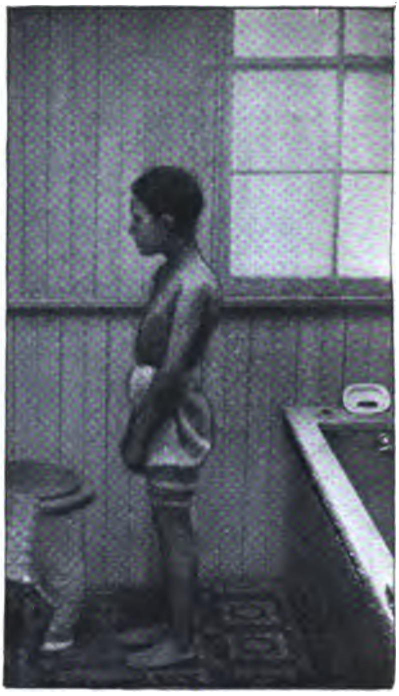


FIG. 4.

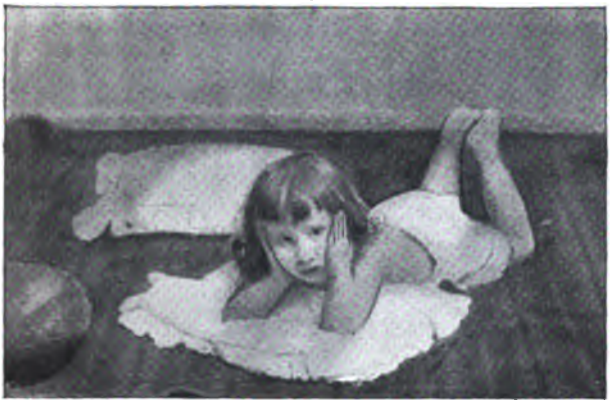


FIG. 3.

FIG. 2.

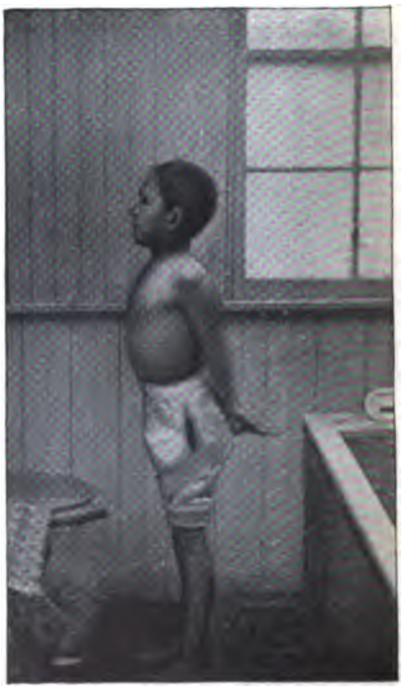
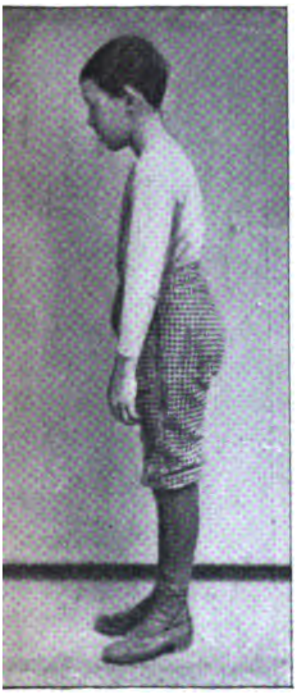


FIG. 5.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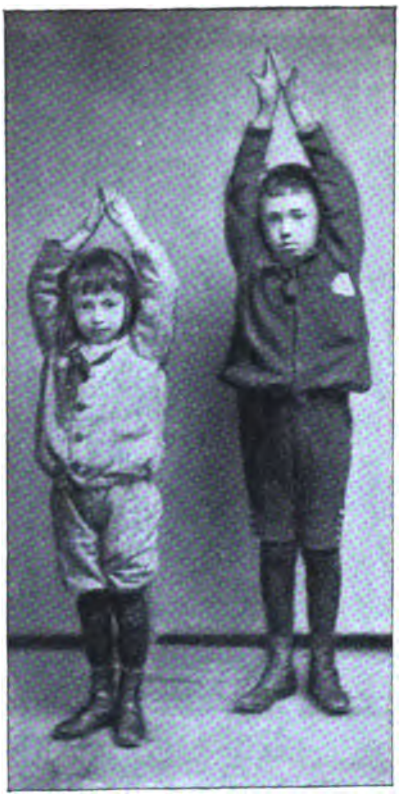
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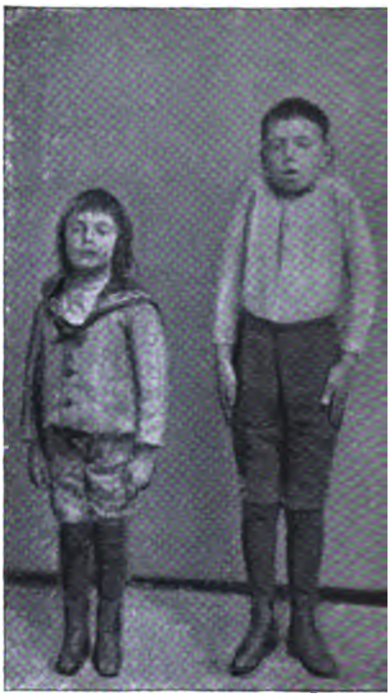
FIG. 10.

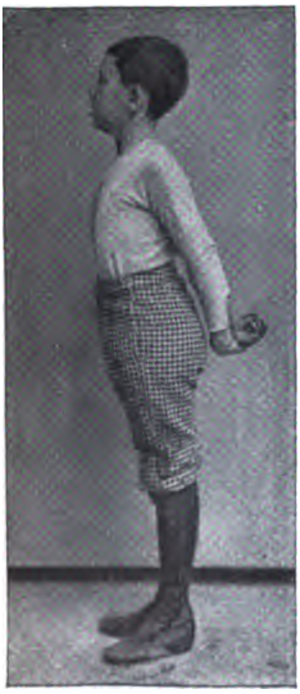
FIG. 7.

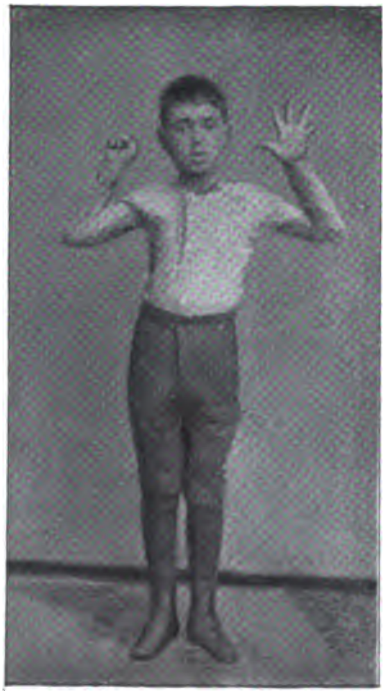
FIG. 9.

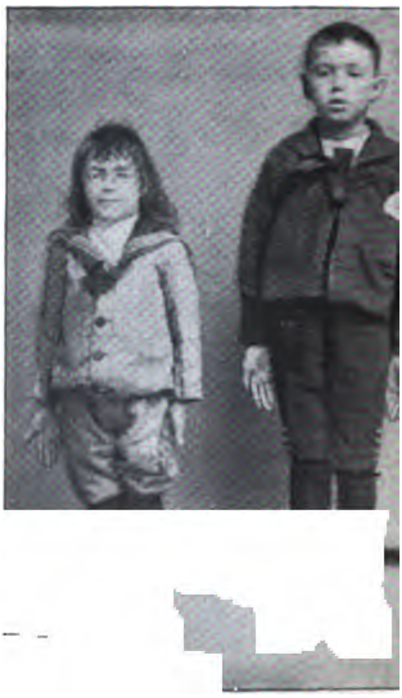
FIG. 8.

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COMMUNICATIONS.

How To Get Strong.

BY JOSEPH F. EDWARDS, A.M., M.D.

It was Dr. Oliver Wendell Holmes who pithily remarked that the training of a child should commence two hundred years before birth, by which he forcibly expressed the unquestioned truism that inheritance has much to do with physical strength. But it would be a melancholy reflection if one were compelled to conclude that because his ancestors were not strong he thereby was of necessity debarred from ever attaining that measure of muscular development so highly prized and so ardently desired by the average individual.

This is not a sporting journal, hence we do not advocate excessive physical culture. With a noted New York professor of physical culture, we have always thought that the best use to make of a gymnasium would be for kindling-wood; that is to say, we have always felt that the violent exercise and the spirit of emulation always incident to exercising with apparatus have injured more persons than they have benefited. Physical culture we heartily believe in for all, but gymnastic exercise we do not indorse for every one. "Strength for health," not "strength for contest," is the kind of strength that we are preaching for.

In our next issue we will present a series of pictures that will demonstrate the forms of exercise by which Mr. James Corbett, the famous pugilist, has acquired and maintained his exceptional strength and physical development. Such muscular strength is not possible to every one, nor is it necessary or desirable; but, that we may enjoy the highest measure of health of which each one of us is capable, physical culture, intelligently directed, is an absolute necessity.

It will be noticed that we do not present any exercises for the lower limbs; that is done intentionally, as it is our idea that walking (which we consider should be religiously indulged in daily) gives to the legs all the exercise that health demands.

It is from the waist up that exercise is called for, and it will be the wise parent who will commence at the earliest possible moment to inculcate such ideas into the pliant minds of their children.

Our illustrations will so clearly demonstrate the motions that we recommend that but little more than a mere explanation thereof will be necessary. Remember that *motion* means exercise, and that whenever a part is *moved* it is being *exercised.*

Since we cannot commence to train the babies that now are, two hundred years before their birth, let us commence as early as we possibly can, and, raising the temperature of the nursery to 80° F., strip our little ones and give them daily, for an hour or two (the longer the better), a full "air-bath." Has it ever occurred to our readers how *very, very seldom* the air, the atmosphere, comes into contact with our bodies, clothed all day; at night, the night-robe hurriedly substituted for the clothing of the day and the bed-clothes piled on top of us; the greatest of all purifiers, the air—the greatest of all health agencies, the air—forever denied access to our skin, is it any wonder that frequent washings are so necessary?

Let the little ones romp and play (in a warm room) in the garb that nature has given them. (See Figures 1, 2 and 3.) Let us try to make our children develop their chests. Look at Figures 4 and 6, and you will see the child in whose narrow and cramped chest will be narrow and cramped lungs that will gladly welcome and hospitably entertain the seeds of consumption; but look now at Figures 5 and 7, and see the same boy (aged 9 years) with his shoulders thrown back, his chest out, his abdomen drawn in, and his lungs distended (by full inspiration) to their utmost capacity. If this boy perseveres he will never have need to fear consumption; such lungs as he will possess will unceremoniously expel the seeds of the disease; such soil will offer nothing congenial to the murderous little bacillus. If we were to remove the heads from Figures 4 and 5, one would hardly believe that the trunks belonged to the same boy; yet what this boy has done, and is doing every day, certainly all other boys can do. Figure 8 represents an exercise that will be most conducive to the development of the muscles of the shoulders and chest, and will result in making the boy *broad-shouldered* without the aid of the tailor's padding; the little boy (aged 5) gives us the first and the larger boy (aged 9) the second position of this exercise, alternately elevating and depressing the shoulders. In Figure 9 we have pictured the two positions of an exercise that will serve to develop all the muscles of the forearm and hand, from the elbow downward. In the right hand we have the first position depicted: all the fingers and the thumb tightly clenched, all the flexor muscles brought into play, while in the left hand we have them all fully extended. This alternate opening and closing of the hand is a most valuable exercise, and can be incorporated into every other motion of the upper extremities. While executing this exercise with one hand, place the other hand on any portion of the exercising forearm, and you will become fully alive to the excellence of this form of exercise. Figures 10, 11 and 12 give us the three positions of an exercise that we can all appreciate and easily execute. Notice how, in Figure 11, the hands are clenched, and, in Figure 12, extended, thus introducing here the motions of Figure 9.

Figures 13 and 14 are sufficiently intelligible to require no text, beyond again calling attention to the flexion and extension of the fingers.

Figures 15, 16, 22 and 23 will offer some little attractiveness to the exercise and will serve to hold and rivet the interest of our little ones. Figures 22 and 23 will help to save our towels after the bath, and will add much to the healthfulness not only of the skin, but of the body at large. Do not be afraid of the air; when the boys come out of the bath, wrap them in blankets for a few minutes, then let them gradually uncover and exercise; they will warm up and dry, and the air will have access to the body; just after the daily *water*-bath would be an admirable time for the daily *air*-bath and the daily exercising.

Figures 10, 17 and 18 demonstrate the respective positions of a most wholesome exercise.

One of the best possible exercises for the correction of "stooping" shoulders, for the cultivation of an erect carriage, and the development of the chest, will be found in Figures 19, 20 and 21. So far the only apparatus we have used has been a cane (see Figures 19, 20 and 21) and boxing-gloves (Figures 15 and 16); now we will introduce a football; it will afford some amusement and offer the opportunity for a splendid exercise, as depicted in Figures 24, 25 and 26.

Figures 27 and 28 will give us development of the muscles of the back.

Now, then, with these few, brief words of explanation we submit these pictures from life to our readers who are parents, urging them, as they value the future physical condition of their children, to start at once, and let such motions be a part of the daily life of their little ones.

No one need say that these exercises cannot be done, for we here show you photographs of children, ranging in age from one to nine years, who are so treated, and who take great pleasure and pride in the exercise and its evident results. One final word in conclusion: the oftener each of these motions is executed the better for the welfare of the child; commencing with ten of each, if after a while the child executes each motion twenty-five, fifty, one hundred, five hundred times daily, all the better. If our graphic representations succeed, as we hope they may, in interesting some parents in the physical development of their children, we should be glad to hear from them from time to time as to the results.

The Health of the Survivors of the War.*

BY JOHN S. BILLINGS, M.D.,
Of the United States Army.

WHAT has been the average effect of their military service upon the health and longevity of the men who constituted the armies of the United States and of the Confederacy in the war of 1861–65? Every one knows what this effect has been upon some of the survivors; that the direct or indirect result of their

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*Abstract of a paper in *The Forum*.

wounds or of disease contracted in the service has caused death to a large number, and has produced more or less physical disability in a much larger number, as is shown by the rolls of the Pension Office. But what proportion of the whole number is formed by those whose lives have thus been cut short, or who remain and are more or less dependent upon the care of others? And what has been the ultimate effect of their campaigns upon the large number of men who were neither sick nor wounded when they were mustered out?

It is now a quarter of a century since they left the regimental colors and returned to civil life—a period quite long enough to permit the effects of their service to have become fully apparent, if it were possible to obtain the data required to answer these questions. In this country, however, our statesmen and legislators, whether State or National, have not as yet, as a rule, formed so high an estimate of the interest and value of human health and life as to induce them to take steps to have records kept of these matters.

In attempting to answer the question, What has been the effect of military service on the health and longevity of the survivors of the war, it is, therefore, impossible to furnish definite and conclusive statistical data, and the best that can be done is to set forth opinions based on limited knowledge.

Probably the general view which prevails among those who have given any consideration to the subject is that the exertions, privations and anxieties of military service during the war must necessarily have lowered the vitality and diminished the power of resistance to subsequent exposure and causes of disease of those who are subjected to these influences, even though no signs of this deterioration were shown at the time of discharge, or for years afterward.

On the other hand a certain number of physicians and sanitarians are of the opinion that a great number of the survivors of the war were improved both mentally and physically by their service in the field, and that, among those who now survive, the expectation of life is quite as great as, if not greater than, that of other males of the same age living in this country under like circumstances. In favor of this view it may be urged that in almost all respects and at almost all times the life of the soldier during the war was more favorable to the production of a strong, well-proportioned body than the life of the average citizen. The soldier had the benefits of a life in the open air—benefits so great that only those who have for a time enjoyed them, and have then for a time been deprived of them, can fully appreciate their value, and which of late years some of our most distinguished physicians seek to secure for many of their patients by recommending camp-life in place of drugs as a course of treatment. The soldier has regular exercise, bringing into play the muscles of body, chest and limbs, and tending to produce greater lung-capacity, a larger and more powerful heart, and a comparative indifference to minor changes of weather and to diet, constituting what we call a healthy organism, which, be it remembered, is not merely an organism that is not sick, but one which is capable of doing its work with vigor and comparative enjoyment without being bound down by the strict rules of diet and mode of life which are requisite for the invalid. No form of mechanical labor, and still less of clerical or mercantile employment, is so well adapted to secure these ends as the systematic training of the body produced by military drill and discipline. It is true that in some cases there are special dangers connected with these, and that drilling and marching in badly-adjusted accouterments, which unduly compress the chest and waist may produce some serious heart troubles, of which the physicians of the great rear-army hospitals had abundant evidence during the first three years of the war. But upon the whole it is probable that the good effects produced by drill far outweigh the evil. As regards food, clothing and shelter, the soldier of the Northern army was, as a rule, well supplied, from the sanitary point of view. The allowance was not luxurious or always comfortable, but it was sufficient, and quite as well calculated to maintain and promote health as that used by the average citizen.

Bearing in mind these two opposing views, each of which embodies a certain portion of the truth, but not the whole truth, let us see what conclusions may be drawn from such incomplete and imperfect data as can be found bearing on these points.

Upon the whole, such imperfect data as we have indicate that the average death-rate among the survivors of the war for the last twenty years has been a little higher than that of the average population of males of the same age. Theoretically it may be argued that the average expectation of life of the veterans now living should be somewhat greater than that of the rest of the male population of the same age, because the weakly ones and those especially injured by military service should have by this time disappeared.

From these figures we must conclude that while the health of some men has been improved by their military service during the war, even to the preservation of lives that would have been lost had the owners remained exclusively in civil life, the health of the average veteran has been deteriorated by his service, and that he suffers more from illness and has a somewhat less expectation of life than other men of his age. This conclusion, based as it is upon an examination of the census data for a small part of the country, is a provisional one only, and we must wait for more complete compilations to give definite and reliable figures.

Sanitary Horseback Riding.*

BY JOHN M. KEATING, M.D.,
Of Colorado Springs, Colorado.

AFTER one has lived for even a few months in the Far West the subject of horseback exercise becomes a topic most absorbing.

The pure air and almost constant sunshine invite one to lead an outdoor life. The shady mountain passes, with the constant change of superb views, from cañons to peaks, and the glimpses of the vast expanse of plains with an horizon like the ocean, tempt one to take exercise which otherwise he would probably not have strength or energy to do. Then to canter on the prairie is so fascinating that one scarcely knows when to stop. "To sleep in a tent, and live on one's horse by day," is a prescription that has saved the life of an otherwise doomed mortal; but I am sorry to say that I fear that it has been greatly abused, and that rash exposure has been guilty of taking to an early grave many who otherwise would have grown well and strong.

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* From *The Medical Record.*

It should be remembered that riding, even walking, one's horse, gives no little exercise; it is naturally fatiguing, indeed exhausting, and one should bear in mind an axiom in the treatment of pulmonary diseases—never to fatigue, but to exercise gradually as the strength increases.

Time and again doctors have told me that patients have come to them in various stages of consumption, some, indeed, in a very debilitated and dangerous condition, buoyed by hope and armed with instructions from the home doctor "to sleep in a tent and take plenty of horseback exercise." Carrying out this advice a fatal hemorrhage would probably prove its harmfulness.

In the studies that I have made in various forms of physical exercise especially beneficial to children and delicate women, I have been impressed with the fact that the perfection of exercise was that which moderately brought into concerted action all the muscles of the body and tended to symmetrically develop the individual, and that well-sustained exercise of this character equalized the circulation, produced no congestions or strain, and stimulated arterial and venous flows. For a man, horseback riding possesses all these qualities; but, strange to say, the woman is so hampered by fashion that I am more and more impressed with the fact that in a large number of cases riding with the side-saddle does far more harm than good.

I have thought this matter over carefully, and am prepared to state most emphatically that I believe the time has come when the side-saddle should be abolished. The position a woman assumes on horseback has three objections: (1) The right leg being at an angle with the body, and more or less fixed, the to-and-fro movements of the body cause more or less pressure upon the abdominal and pelvic viscera; the seat necessarily produces a slight spinal twist in the lumbar region, and should, as unfortunately is too often the case, a perfect-fitting habit or a tight corset be worn, all these evils are exaggerated. (2) The left leg, partly straightened, bears upon it the entire muscular strain; especially is this the case with the upper thigh muscles, whether or not the stirrup be used; and the pressure exerted against the pommel must necessarily retard the circulation in the venous and arterial trunks; this strain, which is always more or less on the left side, certainly must affect the pelvic viscera, especially the left ovary, should it have any tendency to prolapse or congestion – a frequent condition. (3) I believe that this method of riding is unsafe, as it by no means gives a woman the control of her horse in cases of danger that she should have.

However straight a woman may try to hold herself in the position she assumes on a horse, she will gradually fall into the habit of a slight lumbar curvature to the left, and it stands to reason that, for one who rides a great deal, a want of symmetry in development on both sides will be sooner or later noticeable. I believe this is obviated to a certain extent in England by the movable pommel, the young rider being obliged to ride on one side one day and on the next the other.

I am surprised that those who have seen much of the diseases of women have not taken a more positive stand in this matter. There is no reason whatever, except the arbitrary dictates of fashion, why a saddle could not be so constructed that a girl could ride with equal comfort and grace as can her brother; moreover, she would get far better control of her horse, and there would be very much less danger of ovarian and uterine prolapses, bladder disturbances lateral spinal curvatures, etc. Those who have had courage enough to try this innovation have assured me that the difference in comfort was remarkable.

In order to secure the advantages of riding astride, a woman should, I think, have a saddle constructed in a manner different from that used by men. This saddle should combine healthfulness, safety and comfort. Healthfulness would require an erect, symmetrical posture of the rider, freedom from angles that would interfere with perfect circulation and would prevent any strain or pressure on the pelvic organs. Safety would give a firm seat, sure control of the horse, and an easier mount than can now be accomplished. Comfort would come from freedom from restriction and an easy seat.

My idea would be to take a saddle based upon the following plan: The pommel to be somewhat of the Whitman type, but with a twenty-inch seat, a flat ladies' cantle with rolled edges; this would give sufficient length, and would expand into a broad, comfortable seat. The rider, then, instead of assuming a perpendicular position, has the legs flexed almost as much as when sitting on a comfortable chair. There should be for this purpose a stirrup shorter than that worn by men; the flaps then could be padded very much as is now done in the Kentucky saddle. I feel convinced that this form of saddle would be found to be the most useful one that could be adopted.

A Consumptive Romance.*

BY THE LATE DIO LEWIS, M.D.

WHILE practicing my profession in Buffalo, where I lived many years, the mail brought a note one evening requesting an interview with reference to the writer's health. He came next morning and said:

"You see I am a young man; I came to America two years ago seeking my fortune. An old friend induced me to stop here, and now I am junior partner in the firm of G. T. and Co. My father, mother and sister, all died of consumption. I have been coughing and getting thin for about eight months. Please feel my pulse."

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* Dr. Dio Lewis acquired considerable fame for the entertaining manner in which he was wont to relate scientific truths. There is so much sound wisdom in this "Consumptive Romance" that we deem it well worthy of reproduction.—ED.

"What, ninety-five?"

"That's about it, and in the evening I fancy it gets above a hundred."

"How about your breathing?"

"Hills and stairs make me gasp. I have all the symptoms. I watched my sister, and know just how this horrible thing works."

"Night sweats?"

"Not much, though occasionally my shoulders and neck are wet when I wake in the morning."

"Pain?"

"I have several times had a severe pain under my shoulder-blade, and lately a dull aching just here under this collar-bone."

"Expectoration?"

"I raise pretty freely in the morning."

"Prepare yourself, and let me listen." After listening at his chest awhile, I asked: "Do you want me to tell you the truth, or humbug you with a nice story?"

"The truth, doctor—the whole truth."

"Your lungs are in a bad way. The left lung, through all this upper part, is a mass of tubercles. Some of them have softened. The upper part of the right lung is slightly tubercular, but the softening has not yet begun."

"There can be no mistake?"

"I can mark the exact outline of the deposit."

With reddened eyes and trembling voice he said: "I wouldn't mind it for myself, but a beautiful girl, whom I love better than my own life, expects me to come for her next winter. It will kill her, sir. Of course nothing can be done for me?"

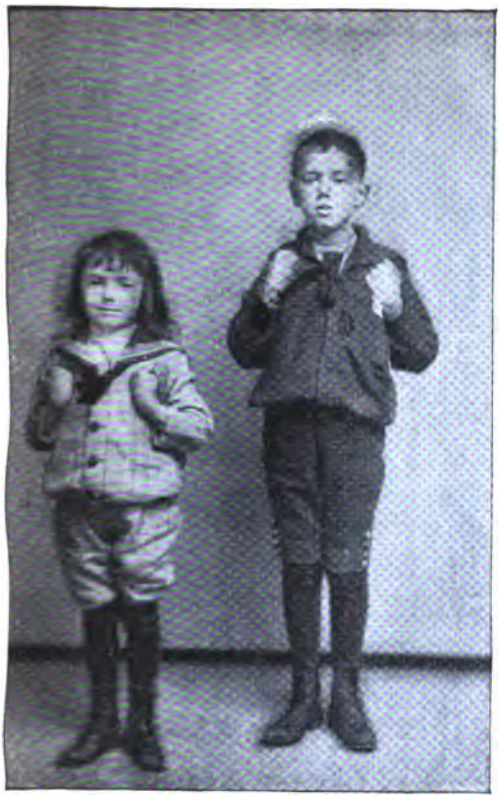
"Let me listen very carefully, and then you must give me a day to think of it."

When he came next morning, I said: "I have written a letter to your friend in England. Here it is. Read it, and hurry it off by the first mail."

"DEAR LADY:—Your friend George C. has come to me about his health. I have examined his lungs and find that he has consumption. In the ordinary course of things he will die in about six months. He has told me with streaming eyes of the crushing grief this news will bring to you. My dear lady, *if you will come to us, you and I will save him.* I am your friend, etc."

The young man withdrew to a window, and when he could command his voice, said: "Are you serious? I thought this disease was as incurable as death."

The letter was sent. A horse and saddle were purchased. He was so impressed with the necessity of doing as I prescribed that he started on his morning ride, in all weathers, at exactly eight o'clock. He rode, as soon as the first soreness disappeared, three and a half hours every day. In a month it was three hours in the forenoon, and two in the afternoon. In a little more



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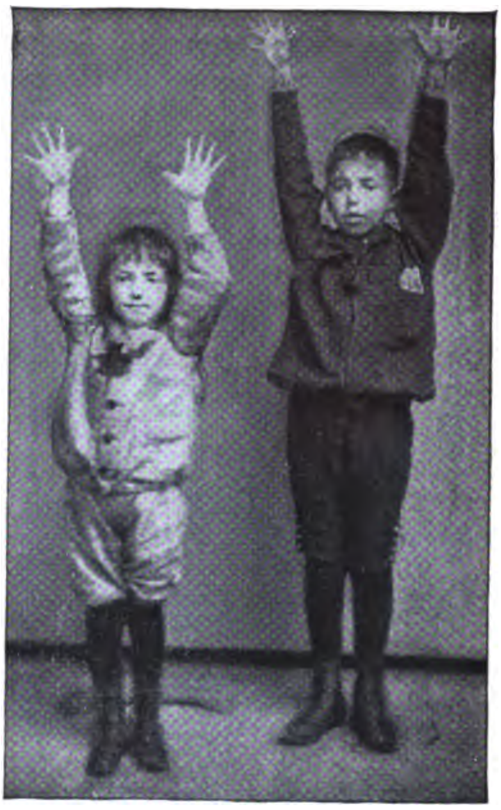

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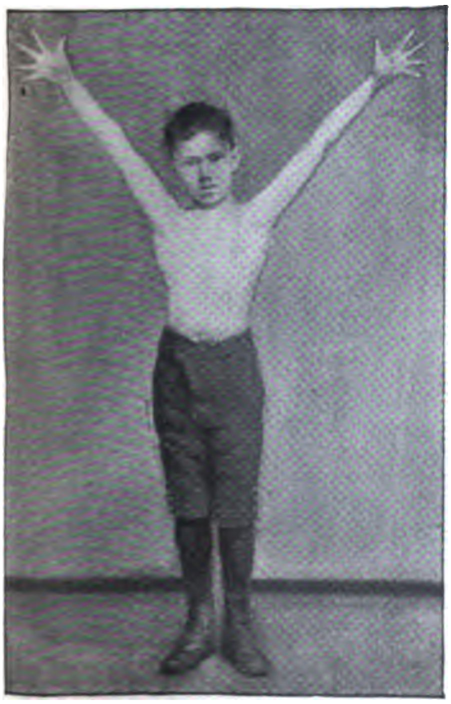

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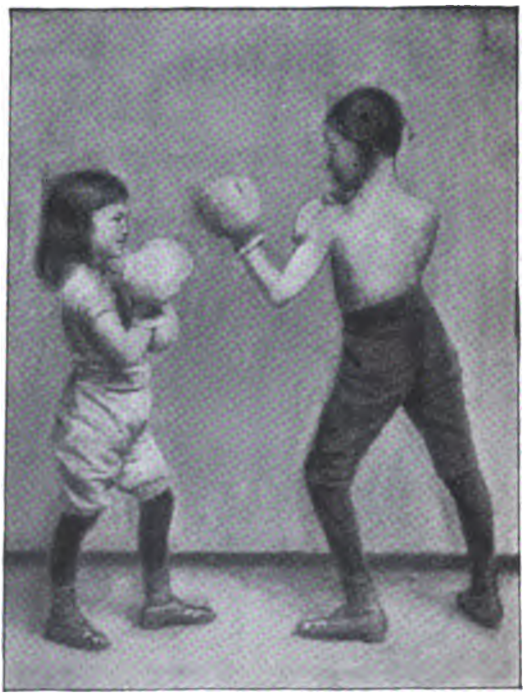

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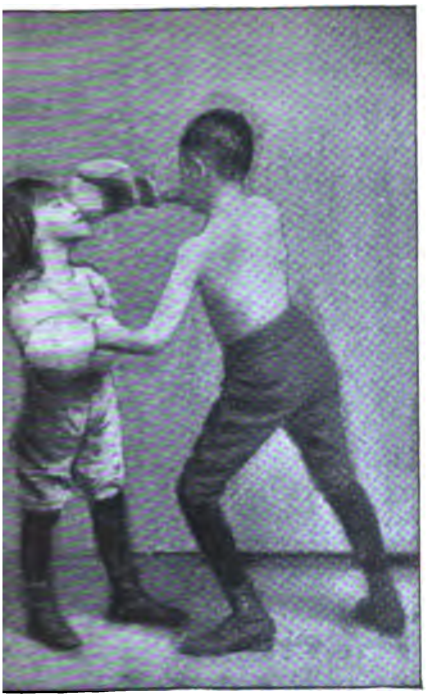

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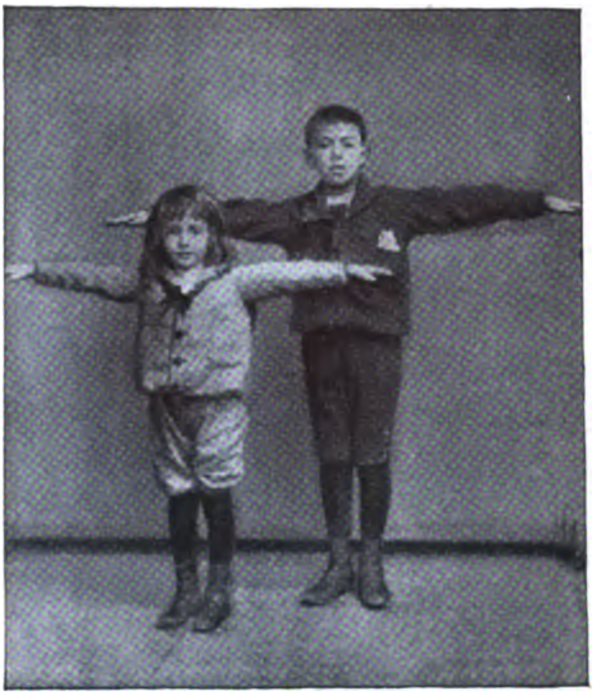

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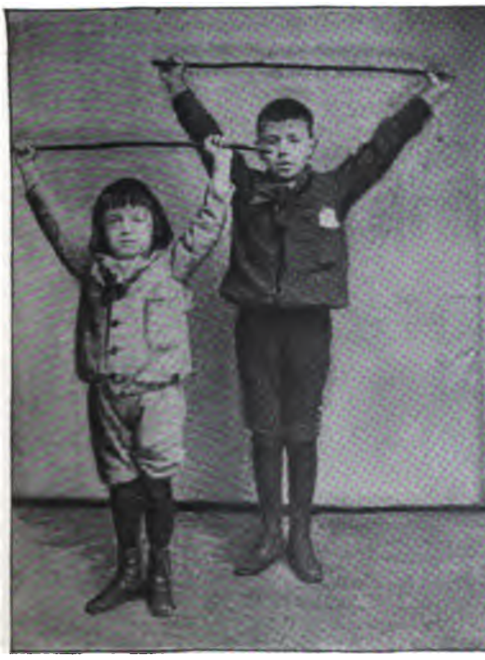

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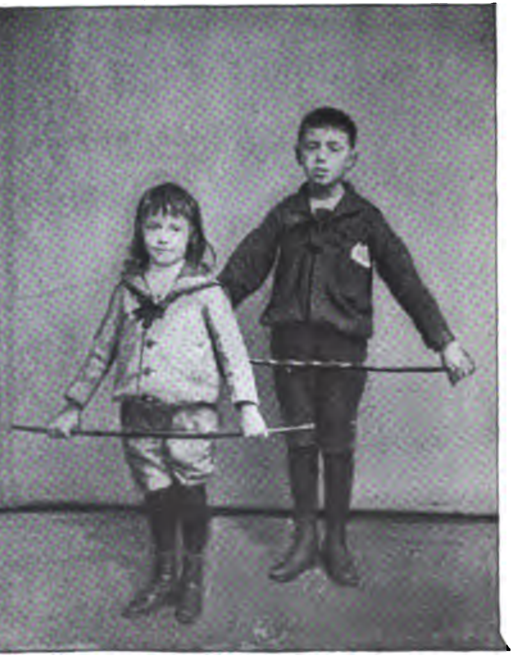

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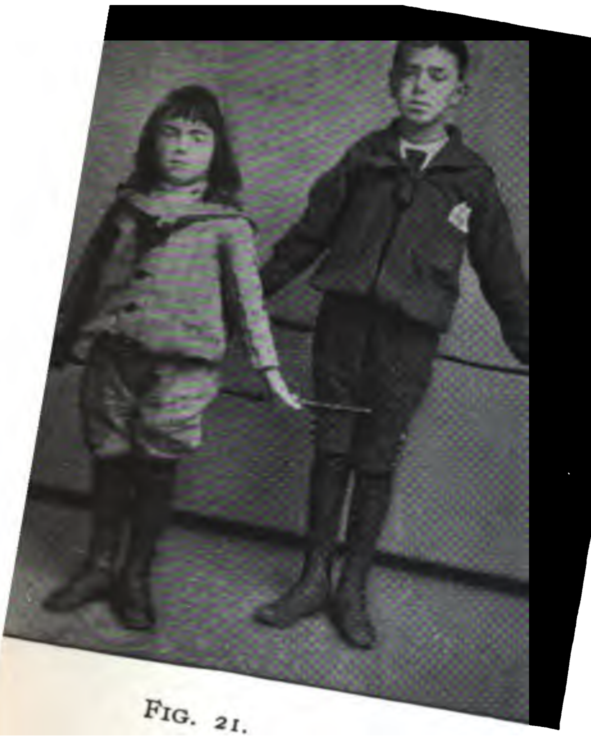

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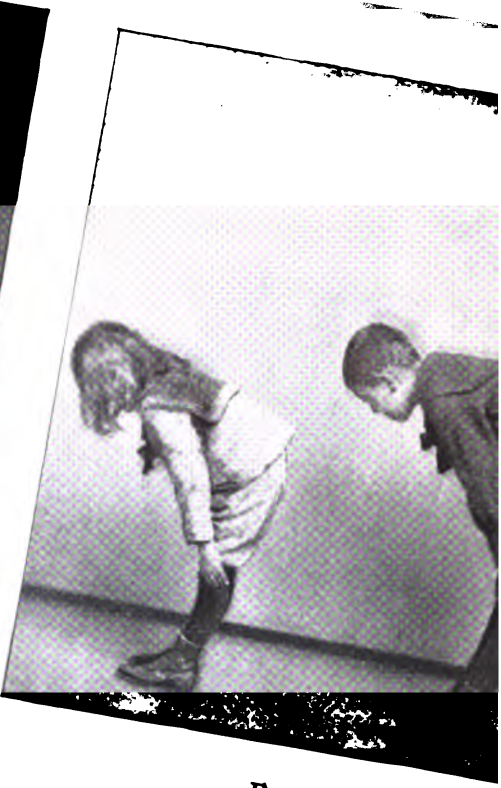

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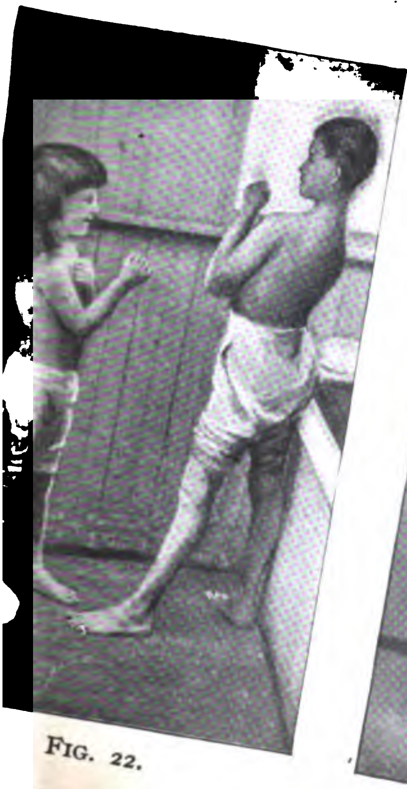

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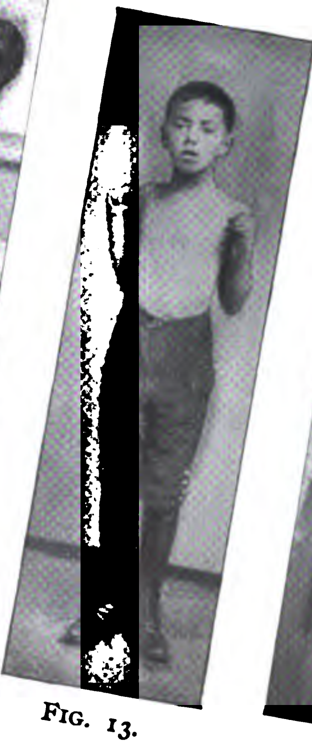

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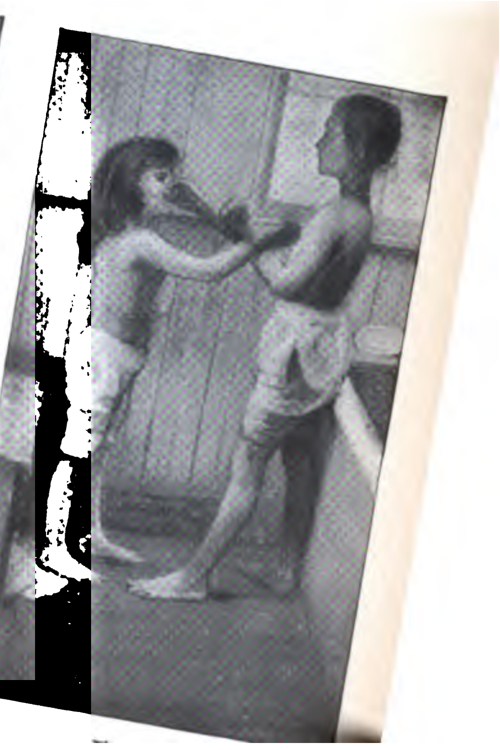

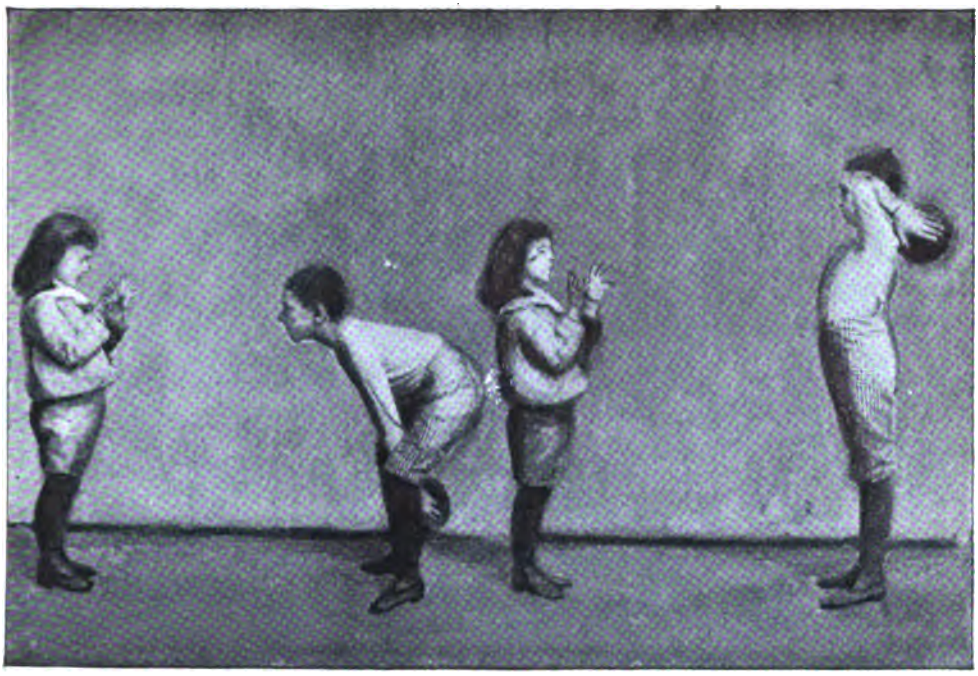

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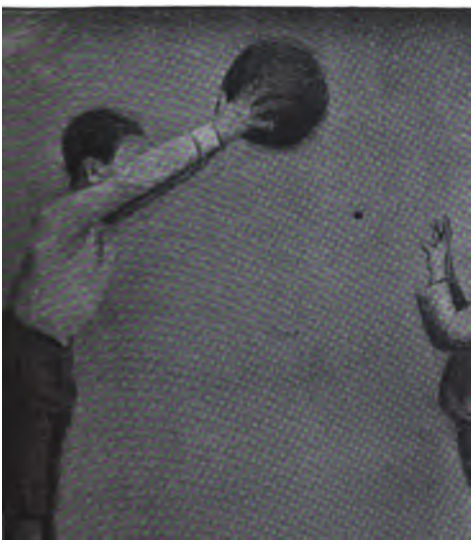

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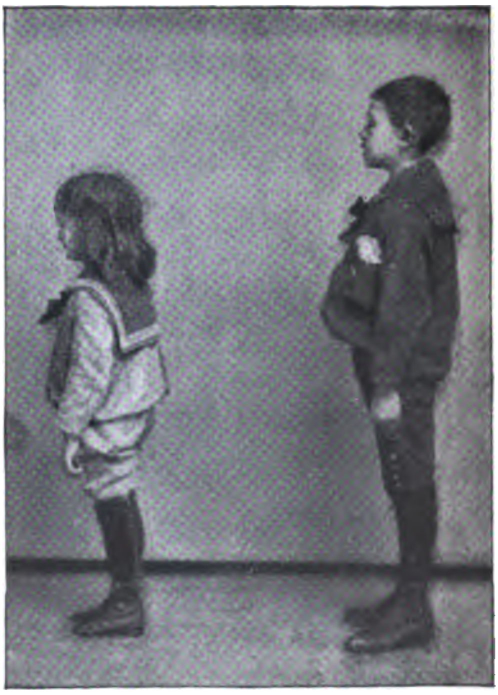


FIG. 27.

than two months Mary arrived, while George was out with his horse. She came at once to me, and, with a painful eagerness, asked, after speaking her own name, "How is George? For mercy's sake, don't tell me he is worse!"

My wife insisted that the marriage should come off at our house. We all cried, and that does seem *so* absurd at a wedding!

Of course parts of his lungs do not breathe, but he is a healthy man, and does a large amount of work. His wife still writes to us. She closed her last letter with the words: "*May God bless you for saving the life of my noble husband!*"

I believe that nothing but a saddle horse could have saved him. Of course, I do not disparage other features of the needed regimen, but the saddle horse is the *Hamlet* of this play. I do not believe in "specifics." But the saddle, in consumption, comes very near one. Dr. Holmes' saying, "that the outside of a horse is good for the inside of a man," is emphatically true in diseases of the lungs.

The needed improvement in digestion and assimilation cannot be secured without much exercise, and the lungs forbid all exercise but the saddle. While a single flight of stairs or a slight hill will make the patient gasp, he can ride a hard trotter ten or twenty miles.

The use of whisky and drugs in consumption proves the patient's ignorance and the doctor's necessity.

Hygeia.

A City of Health.

BY DR. BENJAMIN WARD RICHARDSON,
Of London, Eng.

[Continued from page 19]

THE warming and ventilation of the houses are carried out by a common and simple plan. The cheerfulness of the fireside is not sacrificed; there is still the open grate in every room, but at the back of the firestove there is an air-box or case which, distinct from the chimney, communicates by an opening with the outer air, and by another opening with the room. When the fire in the room heats the iron receptacle, fresh air is brought in from without, and is diffused into the room at the upper part on a plan similar to that devised by Captain Galton.

As each house is complete within itself in all its arrangements, those disfigurements called back premises are not required. There is a wide space consequently between the back fronts of all these houses, which space is, in every instance, turned into a garden square, kept in neat order, ornamented with flowers and trees, and furnished with playgrounds for children, young and old.

The houses being built on arched subways, great convenience exists for conveying sewage from, and for conducting water and gas into, the different domiciles. All pipes are conveyed along the subways, and enter each house from beneath. Thus the mains of the water pipe and the mains of the gas are within instant control on the first floor of the building, and a leakage from either can be immediately prevented. The officers who supply the commodities of gas and water have admission to the subways, and find it most easy and economical to keep all that is under their charge in perfect repair. The sewers of the houses run along the floors of the subways, and are built in brick. They empty into three cross main sewers. They are trapped for each house, and as the water supply is continuous, they are kept well flushed. In addition to the house flushings there are special openings into the sewers by which, at any time, under the direction of the sanitary officer, an independent flushing can be carried out. The sewers are ventilated into tall shafts from the mains by means of a pneumatic engine.

The water-closets in the houses are situated on the middle and basement floors. The continuous water-supply flushes them without danger of charging the drinking water with gases emanating from the closet—a danger so imminent in the present method of cisterns which supply drinking as well as flushing water.

As we walk the streets of our model city, we notice an absence of places for the public sale of spirituous liquors. Whether this be a voluntary purgation in goodly imitation of the National Temperance League, the effect of Sir Wilfrid Lawson's Permissive Bill and most permissive wit and wisdom, or the Good Templars, we need not stay to inquire. We look at the fact only. To this city, as to the town of St. Johnsbury, in Vermont, which Mr. Hepworth Dixon has so graphically described, we may apply the description Mr. Dixon has written : "No bar, no dram shop, no saloon defiles the place. Nor is there a single gaming hell or house of ill-repute." Through all the workshops into which we pass, in whatever labor the men or women may be occupied—and the place is noted for its manufacturing industry—at whatever degree of heat or cold, strong drink is unknown. Practically, we are in a total abstainers' town, and a man seen intoxicated would be so avoided by the whole community that he would have no peace to remain.

And, as smoking and drinking go largely together, as the two practices were, indeed, original exchanges of social degradation between the civilized man and the savage, the savage getting very much the worst of the bargain, so the practices largely disappear together. Pipe and glass, cigar and sherry cobbler, like the Siamese twins, who could only live connected, have both died out in our model city. Tobacco, by far the most innocent partner of the firm, lived, as it perhaps deserved to do, a little the longest; but it passed away, and the tobacconist's counter, like the dram counter, has disappeared.

The streets of our city, though sufficiently filled with busy people, are comparatively silent. The subways relieve the heavy traffic, and the factories are all at short distances from the town, except those in which the work that is carried on is silent and free from nuisance. This brings me to speak of some of the public buildings which have relation to our present studies.

It has been found in our towns, generally, that men and women who are engaged in industrial callings, such as tailoring, shoemaking, dressmaking, lace-work and the like, work at their own homes amongst their children. That this is a common cause of disease is well understood. I have myself seen the half-made riding habit, that was ultimately to clothe some wealthy damsel rejoicing in her morning ride, act as the coverlet of a poor tailor's child stricken with malignant scarlet fever; these things must be in the ordinary course of events under our present bad sanitary system. In the model city we have in our mind's eye, these dangers are met by the simple provision of workmen's offices or work-rooms. In convenient parts of the town there are blocks of buildings, designed mainly after the manner of the houses, in which each workman can have a work-room on the payment of a moderate sum per week. Here he may work as many hours as he pleases, but he may not transform the room into a home. Each block is under the charge of a superintendent, and also under the observation of the sanitary authorities. The family is thus separated from the work, and the working-man is secured the same advantages as the lawyer, the merchant, the banker, now possesses; or, to make the parallel more correct, he has the same advantage as the man or woman who works in a factory, and goes home to eat and to sleep.

In most towns throughout the kingdom the laundry system is dangerous in the extreme. For anything the healthy householder knows, the clothes he and his children wear have been mixed, before, during, and after the process of washing, with the clothes that have come from the bed or the body of some sufferer from a contagious malady. Some of the most fatal outbreaks of disease I have met with have been communicated in this manner. In our model community this danger is entirely avoided by the establishment of public laundries, under municipal direction. No person is obliged to send any article of clothing to be washed at the public laundry; but if he does not send there, he must have the washing done at home. Private laundries that do not come under the inspection of the sanitary officer are absolutely forbidden. It is incumbent on all who send clothes to the public laundry from an infected house to state the fact. The clothes thus received are passed for special cleansing into the disinfecting-rooms. They are specially washed, dried, and prepared for future wear. The laundries are placed in convenient positions, a little outside the town; they have extensive drying grounds, and, practically, they are worked so economically that home-washing days, those invaders of domestic comfort and health, are abolished.

Passing along the main streets of the city we see in twenty places, equally distant, a separate building surrounded by its own grounds—a model hospital for the sick. To make these institutions the best of their kind, no expense is spared. Several elements contribute to their success. They are small, and are readily removable. The old idea of warehousing diseases on the largest possible scale, and of making it the boast of an institution that it contains so many hundred beds, is abandoned here. The old idea of building an institution so that it shall stand for centuries, like a Norman castle, but, unlike the castle, still retain its original character as a shelter for the afflicted, is abandoned here.

The still more absurd idea of building hospitals for the treatment of special organs of the body, as if the different organs could walk out of the body and present themselves for treatment, is also abandoned.

It will repay us a minute of time to look at one of these model hospitals. One is the *fac-simile* of the other, and is devoted to the service of every five thousand of the population. Like every building in the place, it is erected on a subway. There is a wide central entrance, to which there is no ascent, and into which a carriage, cab, or ambulance can drive direct. On each side the gateway are the houses of the resident medical officer and of the matron. Passing down the center, which is lofty and covered in with glass, we arrive at two side-wings running right and left from the center, and forming cross-corridors. These are the wards; twelve on one hand for male, twelve on the other for female patients. The cross-corridors are twelve feet wide and twenty feet high, and are roofed with glass. The corridor on each side is a framework of glazed brick, arched overhead, and divided into six segments. In each segment is a separate light, elegant removable ward, constructed of glass and iron, twelve feet high, fourteen feet long, and ten feet wide. The cubic capacity of each ward is 1,680 feet. Every patient who is ill enough to require constant attendance has one of these wards to himself, so that the injurious influences on the sick, which are created by mixing up, in one large room, the living and the dying—those who could sleep, were they at rest, with those who cannot sleep, because they are racked with pain—those who are too nervous or sensitive to move, or cough, or speak, lest they should disturb others, and those who do whatever pleases them—these bad influences are absent.

The wards are fitted up neatly and elegantly. At one end they open into the corridor, at the other toward a veranda which leads to a garden. In bright weather those sick persons who are even confined to bed can, under the direction of the doctor, be wheeled in their beds out into the gardens without leaving the level floor. The wards are warmed by a current of air made to circulate through them by the action of a steam-engine, with which every hospital is supplied, and which performs such a number of useful purposes that the wonder is how hospital mananagement could go on without the engine.

If at any time a ward becomes infectious, it is removed from its position, and is replaced by a new ward. It is then taken to pieces, disinfected, and laid by, ready to replace another that may require temporary ejection.

The hospital is supplied on each side with ordinary baths, hot-air baths, vapor baths, and saline baths.

A day sitting-room is attached to each wing, and every reasonable method is taken for engaging the minds of the sick in agreeable and harmless pastimes.

Two trained nurses attend to each corridor, and connected with the hospital is a school for nurses, under the direction of the medical superintendent and the matron. From this school, nurses are provided for the town; they are not merely efficient for any duty in the vocation in which they are always engaged, either within the hospital or out of it, but from the care with which they attend to their personal cleanliness, and the plan they pursue of changing every garment on leaving an infectious case, they fail to be the bearer of any communicable disease. To one hospital four medical officers are appointed, each of whom, therefore, has six resident patients under his care. The officers are simply called medical officers, the distinction, now altogether obsolete, between physicians and surgeons being discarded.

The hospital is brought, by an electrical wire, into communication with all the fire-stations, factories, mills, theaters and other important public places. It has an ambulance always ready to be sent out to bring any injured person to the institution. The ambulance drives straight into the hospital, where a bed of the same height on silent wheels, so that it can be moved without vibration into a ward, receives the patient.

The kitchens, laundries and laboratories are in a separate block at the back of the institution, but are connected with it by the central corridor. The kitchen and laundries are at the top of this building, the laboratories below. The disinfecting-room is close to the engine-room; and superheated steam, which the engine supplies, is used for disinfection.

The out-patient department, which is apart from the body of the hospital, resembles that of the Queen's Hospital, Birmingham—the first out-patient department, as far as I am aware, that ever deserved to be seen by a generous public. The patients waiting for advice are seated in a large hall, warmed at all seasons to a proper heat, lighted from the top through a glass roof, and perfectly ventilated. The infectious cases are separated carefully from the rest. The consulting-rooms of the medical staff are comfortably fitted, the dispensary is thoroughly officered, and the order that prevails is so effective that a sick person, who is punctual to time, has never to wait.

The medical officers attached to the hospital in our model city are allowed to hold but one appointment at the same time, and that for a limited period. Thus every medical man in the city obtains the equal advantage of hospital practice, and the value of the best medical and surgical skill is fairly equalized through the whole community.

In addition to the hospital building is a separate block, furnished with wards, constructed in the same way as the general wards, for the reception of children suffering from any of the infectious diseases. These wards are so planned that the people generally send sick members of their own family into them for treatment, and pay for the privilege.

Supplementary to the hospital are certain other institutions of a kindred character. To check the terrible course of infantile mortality of other large cities—the 76 in the 1,000 of mortality under five years of age—homes for little children are abundant. In these the destitute young are carefully tended by intelligent nurses; so that mothers, while following their daily callings, are enabled to leave their children under efficient care.

In a city from which that grand source of wild mirth, hopeless sorrow and confirmed madness, alcohol, has been expelled, it could hardly be expected that much insanity would be found. The few who are insane are placed in houses licensed as asylums, but not different in appearance from other houses in the city.

Here the insane live, in small communities, under proper medical supervision, with their own gardens and pastimes.

The houses of the helpless and aged are, like the asylums, the same as the houses of the rest of the town. No large building of pretentious style uprears itself for the poor; no men badged and badgered as paupers walk the place. Those poor who are really, from physical causes, unable to work are maintained in a manner showing that they possess yet the dignity of human kind, and that, being worth preservation, they are therefore worthy of respectful tenderness. The rest, those who can work, are employed in useful labors, which pay for their board. If they cannot find work and are deserving, they may lodge in the house and earn their subsistence; or they may live from the house and receive pay for the work done. If they will not work, they, as vagrants, find a home in prison, where they are compelled to share the common lot of mankind.

Our model city, is of course, well furnished with baths, swimming baths, Turkish baths, playgrounds, gymnasia, libraries, board-schools, fine-art schools, lecture halls, and places of instructive amusement. In every board-school drill forms part of the programme. I need not dwell on these subjects, but must pass to the sanitary officers and offices.

There is in the city one principal sanitary officer, a duly qualified medical man elected by the Municipal Council, whose sole duty it is to watch over the sanitary welfare of the place. Under him, as sanitary officers, are all the medical men who form the poor law medical staff. To him these make their reports on vaccination and every matter of health pertaining to their respective districts; to him every registrar of births and deaths forwards copies of his registration returns; and to his office are sent, by the medical men generally, registered returns of the cases of sickness prevailing in the district. His inspectors likewise make careful returns of all the known prevailing diseases of the lower animals and of plants. To his office are forwarded, for examination and analysis, specimens of foods and drinks suspected to be adulterated, impure, or otherwise unfitted for use. For the conduction of these researches the sanitary superintendent is allowed a competent chemical staff. Thus, under this central supervision, every death, every disease of the living world in the district, and every assumable cause of disease, comes to light, and is subjected, if need be, to inquiry.

At a distance from the town are the sanitary works, the sewage pumping works, the water and gas works, the slaughter-houses and the public laboratories. The sewage, which is brought from the town partly by pumping apparatus, is conveyed away to well-drained sewage farms belonging to, but at a distance from, the city, where it is utilized.

The water supply, derived from a river which flows to the southwest of the city, is unpolluted by sewage or other refuse, is carefully filtered, is tested twice daily, and if found unsatisfactory is supplied through a reserve tank, after it has been made to undergo further purification. It is carried through the city everywhere by iron pipes. Leaden pipes are forbidden. In the sanitary establishment are disinfecting-rooms, a mortuary, and ambulances for the conveyance of persons suffering from contagious disease. These are at all times open to the use of the public, subject to the few and simple rules of the management.

The gas, like the water, is submitted to regular analyses by the staff of the sanitary officer, and any fault which may be detected, and which indicates a departure from the standard of purity framed by the Municipal Council, is immediately remedied, both gas and water being exclusively under the control of local authority.

The inspectors of the sanitary officer have under them a body of scavengers. These each day, in the early morning, pass through the various districts allotted to them, and remove all refuse in closed vans. Every portion of manure from stables, streets and yards is in this way removed daily, and transported to the city farms for utilization.

Two additional conveniences are supplied by the scientific work of the sanitary establishment. From steam-works steam is condensed, and a large supply of distilled water is obtained and preserved in a separate tank. This distilled water is conveyed by a small main into the city, and is supplied at a moderate cost for those domestic purposes for which hard water is objectionable.

The second sanitary convenience is a large ozone-generator. By this apparatus ozone is produced in any required quantity, and is made to play many useful purposes. It is passed through the drinking water in the reserve reservoir whenever the water shows an excess of organic impurity, and it is conveyed into the city for diffusion into private houses, for purposes of disinfection.

The slaughter-houses of the city are all public, and are separated by a distance of a quarter of a mile from the city. They are easily-removable edifices, and are under the supervision of the sanitary staff. The Jewish system of inspecting every carcass that is killed is rigorously carried out, with this improvement, that the inspector is a man of scientific knowledge.

All animals used for food—cattle, fowls, swine, rabbits—are subjected to examination in the slaughter-house, or in the market, if they be brought into the city from other depots. The slaughter-houses are so constructed that the animals killed are relieved from the pain of death. They pass through a narcotic chamber, and are brought to the slaughter oblivious of their fate. The slaughter-houses drain into the sewers of the city, and their complete purification daily, from all offal and refuse, is rigidly enforced.

The buildings, sheds, and sties for domestic food-producing animals are removed a short distance from the city, and are also under the supervision of the sanitary officer; the food and water supplied for these animals come equally, with human food, under proper inspection.

One other subject only remains to be noticed in connection with the arrangements of our model city, and that is the mode of the disposal of the dead. The question of cremation and of burial in the earth has been considered, and there are some who advocate cremation. For various reasons the process of burial is still retained: firstly, because the cremation process is open to serious medicolegal objections; secondly, because, by the complete resolution of the body into its elementary and inodorous gases in the cremation furnace, that intervening chemical link between the organic and inorganic worlds, the ammonia, is destroyed, and the ecomony of nature is thereby dangerously disturbed; thirdly, because the natural tendencies of the people lead them still to the earth, as the most fitting resting-place into which, when lifeless, they should be drawn.

Thus the cemetery holds its place in our city, but in a form much modified from the ordinary cemetery. The burial ground is artificially made of fine carboniferous earth. Vegetation of rapid growth is cultivated over it. The dead are placed in the earth from the bier, either in basket-work or simply in the shroud; and the monumental slab, instead of being set over or at the head or foot of a raised grave, is placed in a spacious covered hall or temple, and records simply the fact that the person commemorated was recommitted to earth in those grounds. In a few months, indeed, no monuments would indicate the remains of any dead. In that rapidly-resolving soil the transformation of dust into dust is too perfect to leave a trace of residuum. The natural circle of transmutation is harmlessly completed, and the economy of nature conserved.

RESULTS.

Omitting, necessarily, many minor but yet important details, I close the description of the imaginary health city. I have yet to indicate what are the results that might be fairly predicted in respect to the disease and mortality presented under the conditions specified.

Two kinds of observation guide me in this essay: one derived from statistical and sanitary work; the other from experience, extended now over thirty years, of disease, its phenomena, its origin, its cause, its terminations.

I infer, then, that in our model city certain forms of disease would find no possible home, or, at the worst, a home so transient as not to affect the mortality in any serious degree. The infantile diseases, infantile and remittent fevers, convulsions, diarrhœa, croup, marasmus, dysentery, would, I calculate, be almost unknown. Typhus and typhoid fevers and cholera could not, I believe, exist in the city except temporarily and by pure accident; smallpox would be kept under entire control; puerperal fever and hospital fever would probably cease altogether; rheumatic fever, induced by residence in damp houses, and the heart disease subsequent upon it, would be removed. Death from privation and from purpura and scurvy would certainly cease. Delirium tremens, liver disease, alcoholic phthisis, alcoholic degeneration of kidneys and all the varied forms of paralysis, insanity and other affections due to alcohol, would be completely effaced. The parasitic disease arising from the introduction into the body, through food, of the larvæ of the entozoa would cease. That large class of deaths from pulmonary consumption, induced in less favored cities by exposure to impure air and badly-ventilated rooms, would, I believe, be reduced so as to bring down the mortality of this signally fatal malady one-third at least.

Some diseases, pre-eminently those which arise from uncontrollable causes, from sudden fluctuations of temperature, electrical storms, and similar great variations of nature, would remain as active as ever; and pneumonia, bronchitis, congestion of the lungs and summer cholera would still hold their sway. Cancer, also, and allied constitutional disease of strong hereditary character would yet, as far as I can see, prevail. I fear, moreover, it must be admitted that two or three of the epidemic diseases, notably scarlet fever, measles, and whooping-cough, would assert themselves, and, though limited in their diffusion by the sanitary provisions for arresting their progress, would claim a considerable number of victims.

With these last facts clearly in view, I must be careful not to claim for my model city more than it deserves; but calculating the mortality which would be saved, and comparing the result with the mortality which now prevails in the most favored of our large English towns, I conclude that an average mortality of eight per thousand would be the maximum in the first generation living under this salutary *regime*. That in a succeeding generation Mr. Chadwick's estimate of a possible mortality of five per thousand would be realized, I have no reasonable doubt, since the almost unrecognized, though potent, influence of heredity in disease would immediately lessen in intensity, and the healthier parents would bring forth healthier offspring.

As my voice ceases to dwell on this theme of a yet unknown city of health, do not, I pray you, wake as from a mere dream. The details of the city exist. They have been worked out by those pioneers of sanitary science, so many of whom surround me to-day, and specially by him whose hopeful thought has suggested my design. I am, therefore, but as a draughtsman, who, knowing somewhat your desires and aspirations, have drawn a plan which you in your wisdom can modify, improve, perfect. In this I know we are of one mind, that though the ideal we all of us hold be never reached during our lives, we shall continue to work successfully for its realization. Utopia itself is but another word for time; and some day the masses, who now heed us not, or smile incredulously at our proceedings, will awaken to our conceptions. Then our knowledge, like light rapidly conveyed from one torch to another, will bury us in its brightness.

> By swift degrees the love of Nature works
> And warms the bosom: till at last, sublimed
> To rapture and enthusiastic heat,
> We feel the present DEITY, and taste
> The joy of GOD to see a happy world!

Hotbeds of Disease.

A NIGHT IN THE "SLUMS" OF NEW YORK.

BY THE EDITOR.

[Continued from page 37.]

AFTER taking the photograph of the Chinese merchandise store (see page 48), and as we chatted for a few minutes with the proprietor, a respectably, even fashionably, dressed white American girl of, maybe, 25 years of age, entered and made a purchase. To our inquiry as to what she was after, we were informed by the detective that she was an "opium fiend." Here, then, I thought, is one argument against Chinese immigration. We have vices enough, and plenty of artificial enemies to health, without having additional ones introduced by these Celestials. It is greatly to the credit of the police of New York that regular "opium joints" are no longer to be found in the metropolis; that is to say, the temptation to "hit the pipe" is no longer enticingly and glaringly set forth before the people as was once the case; the Chinese will smoke opium (as a police captain truly put it to us), and no human power can stop it, but there are no longer any recognized dens into which the young men and women of the city are beguiled to be robbed of their senses and their humanity by the narcotizing agency of opium.

The Chinese are certainly a curious race; as we enter a house in Mott Street and pass up one flight of stairs, we are taken into a Chinese restaurant (see page 33), the proprietor of which and the cooks and waiters of which are all Chinese; but the patrons certainly formed the most cosmopolitan crowd it has ever been my fortune to encounter. Japanese sailors (in costume), Chinese, Italians, Negroes, Irish, Germans, Americans, literally a happy family of most mixed nationalities. The appearance of our "camera" was the signal for a universal scramble; out on to the balcony, up stairs, down stairs, into the kitchen, anywhere, everywhere, to get out of the range of the instrument; dishes were abandoned and business, for the time, paralyzed, at which the proprietor, justly displeased, approached our party, with no friendly looks, and said, with considerable excitement and emphasis: "Me no likee, spoilee business, me no likee." We didn't like it either, for we were fully aware of the average Chinaman's love for the "almighty dollar," and we felt somewhat impelled to move away when we noted the angry looks and threatening gestures of the proprietor and his satellites. But we had time enough to convince ourselves that any one who has any respect for his stomach, or any desire for wholesome nourishment, would be very unwise to patronize a Chinese restaurant in the "slums" of New York.

To make amends for our misdeeds in temporarily paralyzing this Chinaman's business, we ascended another flight of stairs and entered a Chinese Joss house (see page 48), where we again encountered opposition to the work of our camera from the clergyman (I suppose we should so designate him) in charge. I have said that the Chinese are a curious race, and in this temple and surroundings was conceived the thought that causes me to so speak. This Joss house and this clergyman were found in, probably, the dirtiest part of New York, yet neither the man nor his surroundings were dirty. As a rule, filth is a universal contaminator; bring the cleanest of men or women from a Fifth Avenue residence and compel them to reside in the "slums," and it will be but a short time before they are, physically and morally dirty; this almost universal rule does not seem to hold so universally with the Chinese; whether it be that familiarity breeds contempt (for filth) or whether it be that they do not show dirt as do other persons, I am not prepared to say; but the fact remains that during my daylight ramble in the "slums," while I encountered countless numbers of filthy Italians, Poles, Russians, Irish, Americans, indeed filthy specimens of all nationalities, the Chinamen whom I met were, apparently, comparatively clean. I have been speaking of them *physically* considered, but a hasty survey caused me to think that they were, also, morally speaking, comparatively clean. I confess my inability to discuss "Chinese morality," because of ignorance of the question, but I was struck by the fact that among the frequenters of the low "dives" that we visited, the Chinese were conspicuous by their absence. Impelled by this observation to ask our detective whether he had much trouble with the Chinese, if they were inclined to be disorderly, I was almost prepared for his negative reply, and was not surprised when he told me that one officer could handle twenty Chinamen.

A BLACK-AND-TAN DIVE IN "AFRICA."

The Irish (with their whisky) and the Italians (with their fiery tempers and deceitful treachery) are the two nationalities that make the most trouble for the police force of New York. In this observation there is food for much reflection.

So on we might continue to describe the sights witnessed during our midnight tour, but words, even the most inspired, would convey but a very faint conception of what is to be seen; the pictures which we furnish tell the tale as no language can portray it.

Now, then, are these "slums" menaces to health; and if so, how can the danger be averted?

Unquestionably, the herding together of organic life, when that herding becomes so great as to have exceeded the proper relation between numbers and acreage, is a menace to health. If we overcrowd our chicken yards, disease and death will decimate the flock; and what occurs with chickens will surely be found to occur with man.

"So long as the wretched, filthy dens of dirt, vermin and disease stand as the only shelter for the children of the slums, so long will moral and physical contagion flourish and send forth death-dealing germs;" so says Mr. B. O. Flower (in *The Arena*) speaking of the slums of Boston. "Drop a case of scarlet fever, of measles or of diphtheria into one of these barracks," says Mr. Riis, "and, unless it is caught at the very start and stamped out, the contagion of the one case will sweep block after block and half-people the graveyard." At the risk of becoming tedious, let us make the following quotation from Mr. Riis' book:

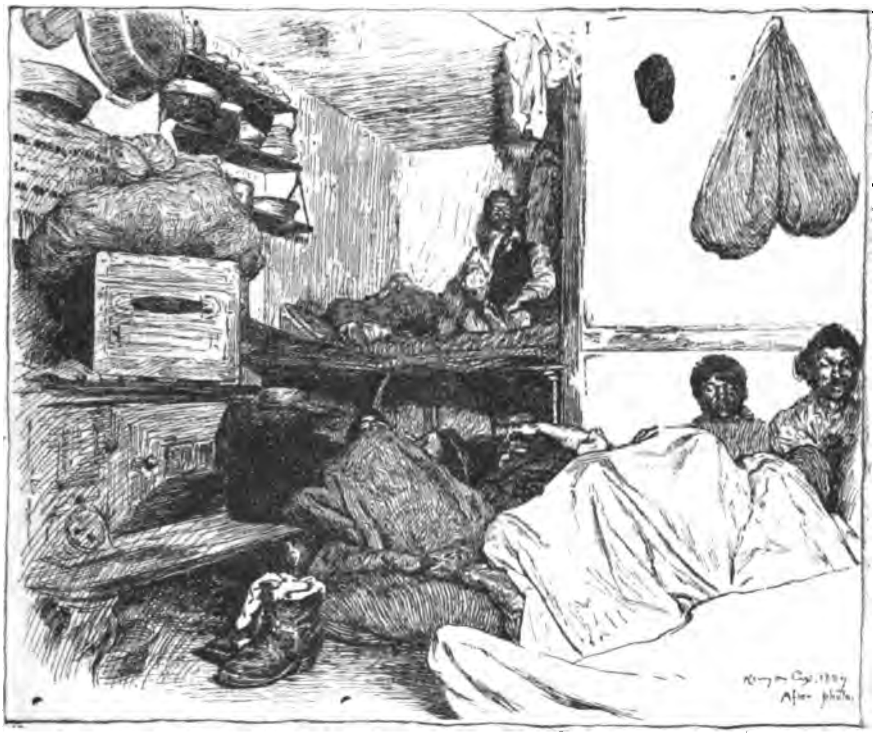
> "Well do I recollect the visit of a health inspector to one of these tenements on a July day, when the thermometer outside was climbing high into the nineties; but, inside, in that awful room, with half-a-dozen persons washing, cooking, and sorting rags, lay that dying baby alongside the stove—where the doctor's thermometer ran up to 115°—perishing for the want of a breath of fresh air in this city of untold charities! Did not the Manager of 'The Fresh Air Fund' write to the pastor of an Italian Church, only last year, that 'no one asked for Italian children,' and hence he could not send any to the country. Half-a-dozen blocks up Mulberry Street, there is a rag-pickers' settlement, a sort of overflow from 'The Bend' that exists, to-day, in all its pristine nastiness. Something like forty families are packed into five old two-story and attic-houses that were built to hold five; and out in the yards additional crowds are, or were until very recently, accommodated in sheds built of all sorts of old boards, and used as drying-racks for the Italian tenants' 'stock.' It is in 'The Bend' the sanitary policemen locates the bulk of his 400 and the sanitary reformer gives up the task in despair. Of its vast homeless crowds the census takes no account. It is their instinct to shun the light, and they cannot be corralled in one place long enough to be counted. But the houses can, and the last count showed that in 'The Bend' district, between Broadway and the Bowery, and Canal and Chatham Streets, in a total of 4,367 'apartments,' only nine were, for the moment, vacant. That squalor and degradation inhabit these dens, the health officers know. Through the long summer days their carts patrol 'The Bend,' scattering disinfectants in streets and lanes, in sinks and cellars and hidden hovels where the tramp burrows. In a room not thirteen feet either way (see page 87) slept twelve men and women—two or three in bunks set in a sort of alcove; the rest on the floor.
>
> "A baby's fretful wail came from an adjoining hall-room, where, in the semi-darkness, three recumbent figures could be made out. Most of the men were lodgers, who slept there for five cents a spot."

Let us, for a moment, look into the vital statistics of the "slums." Again, quoting from Mr. Riis:

> "In this block between Bayard, Park, Mulberry and Baxter Streets, 'The Bend' proper, the late Tenement House Commission counted 155 deaths of children (under five years of age) in a specimen year (1882). Their percentage of the total mortality in the block was 68.28; while, for the whole city, the proportion was only 46.20."

We might go on indefinitely quoting statistics and relating our own observations to prove that the "slums" of any city, town, village or locality are dirty and overcrowded, but it would be only consuming space to prove that which any reasonable person is already prepared to concede. So, also, we take it, there is no question but that overcrowding and filth are provocative of disease; hence, since the slums are overcrowded and filthy, and since overcrowding and filth are conducive to disease, logically the "slums" are "hotbeds" of disease.

Such being the accepted fact, wherein are we to find the remedy? In the heroic measure of ANNIHILATION and in this alone; not annihilation of the individuals, but of the section. We have before argued, when writing of similar questions we now suggest again (and we find our suggestion indorsed in the communication from Dr. Roger S. Tracy, with which we close this article), that temporizing, half-way measures will never accomplish the full measure of lasting good that public health demands in dealing with this question of the "slums." The pest-spots will always exist as menaces to human health until an educated popular sentiment has made the care of the public health an obligation before which all other considerations must give way.



LODGERS IN A CROWDED BAYARD STREET TENEMENT—"FIVE CENTS A SPOT."

In time of war the commanding general is an absolute autocrat, whose every command must be implicitly, unquestionably and unhesitatingly obeyed. If the destruction of property seems necessary for the welfare of the country, it is unhesitatingly destroyed; the end seems always to justify the means. Diplomacy gives way to destruction, and he who fights the best wins the battle. It is related that at one period during our late war, when popular sentiment was strongly against General Grant, and the country was loudly clamoring for his removal from the command of the armies, President Lincoln, worried and harassed by the conflicting sentiments of conviction and diplomacy, finally decided in Grant's favor, with this significant remark, "*I can't spare this man; he fights.*"

The sagacious mind of Lincoln recognized the value of a fighter when dealing with the enemy. When dealing with the invisible enemies to human health, the myriads of microscopic germs, invisible, yet almost invincible, diplomacy utterly fails, and real, genuine hard fighting becomes necessary. Mild legislation will be ever ineffective; moral suasion, elsewhere so potent, will be utterly valueless in the "slums;" the warfare between health and the germs of disease is not "a war of words," it is a battle of life and death; we must destroy the disease, or the disease will destroy us; we can be the victors in every instance, but, that we may be so, we must be led by "fighters," and we must be fighters ourselves. While diplomacy served to settle the difficulty between this country and far-away Italy, sword and fire and guns and powder were necessary to determine the difficulty between neighboring France and Germany.

AN ALL-NIGHT TWO-CENT RESTAURANT, IN "THE BEND."

So with disease: if my friend Jones is sick, with a slight cold, a hot lemonade may cure him, but if he has a cancer I must unhesitatingly cut it out.

If Baxter Street or Mulberry Street is merely dirty, the street-sweeper can remedy the trouble; but when this whole section of the city is *saturated*—the houses, the ground, the people—with filth, the houses must be destroyed, the ground purified, and the people driven away, that the continued pollution of the locality may be stopped.

I once knew an otherwise and previously healthy locality to be used as a pasturage for a large number of horses; a large amount of organic matter was deposited on the ground from these horses; the soil was not cultivated, and when houses were subsequently built upon this site the residents were distinctly afflicted with malarial disease. So, I believe, the soil of the "slums" is so saturated with organic filth and germs of disease that nothing short of cultivation will ever radically purify it.

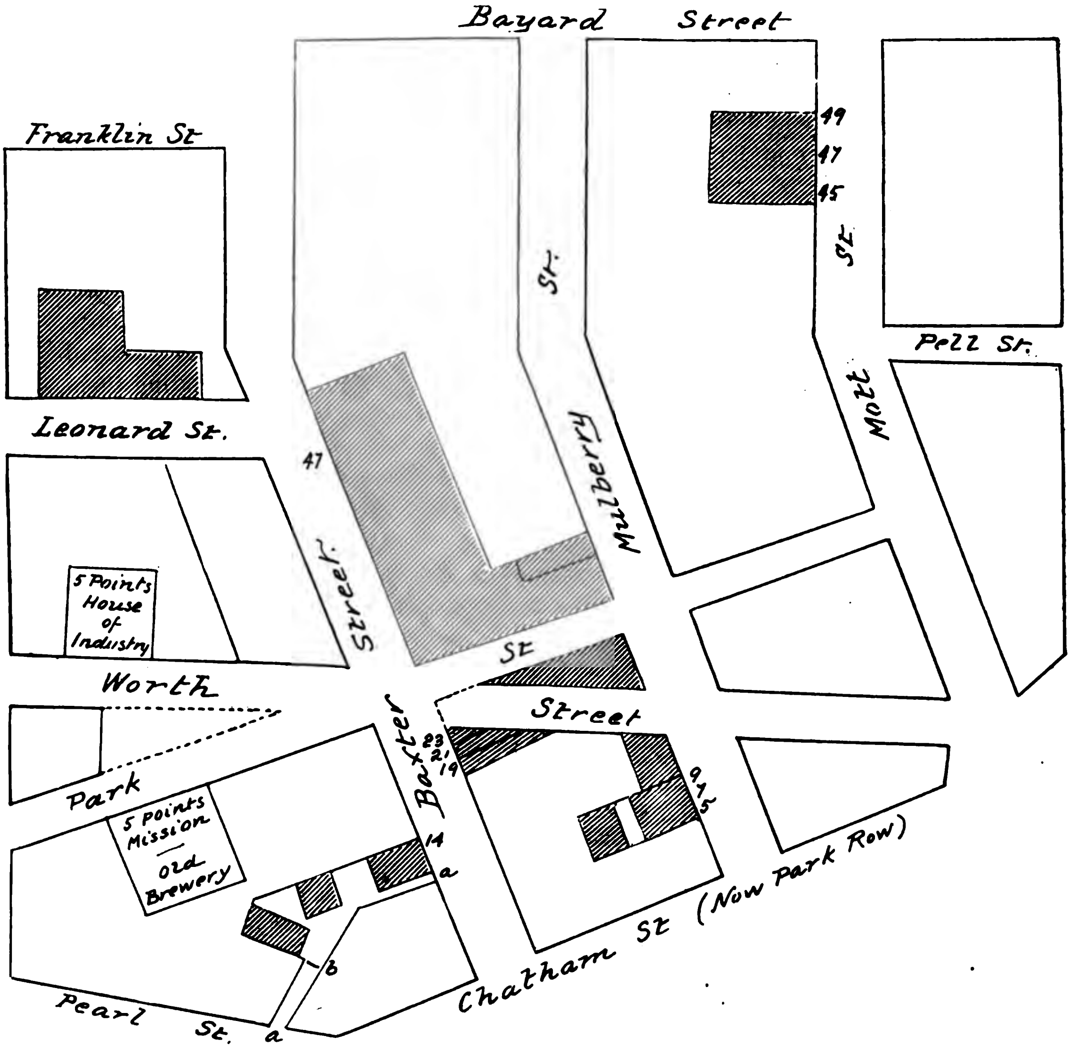
Again, it is necessary to say that the Board of Health of New York has done most efficient and salutary work in the "slums" of New York, and that, with the power at hand, no human agency could do more; but that the ideal condition may be secured, nothing short of annihilation will be effective. When the shaded portion of our diagram of the "slums" is a public park; when the number of occupants to a house is regulated by law, and *when the law is enforced*, then, and not before, will the "slums" of New York or of any other locality cease to be a standing menace to the health of the community. The smaller the sore, other things being equal, the more readily is it eradicated. The smaller the "slums" the less formidable is the task of annihilating them, hence will it be wise for all communities, howsoever small, to hunt out their pest-spots and destroy them before they have gained that magnitude as to necessitate almost a social earthquake for their upheaval.

That I might have some accurate knowledge of the work done by the New York Board of Health in the "slums," I placed myself in communication with Dr. Joseph D. Bryant, the Commissioner of Health of New York, who kindly and courteously referred my inquiries to Dr. Roger S. Tracy, the Registrar, and he, in turn, promptly, frankly and fully gives me the situation, which I here reproduce in his words. I am also indebted to Dr. Tracy for the two diagrams outlining the "slums" as they were and are.

JOSEPH F. EDWARDS, M.D.

Dear Sir: Your letter to Dr. Bryant, dated the 12th inst., has been referred to me. Unfortunately the comparison you desire to make between the condition of the "slums" ten or twenty years ago and to-day cannot be made excepting in a general way. By this I mean that any bare statistical comparison is impossible, on account of the *hiatus* in the published records of twenty years ago and the great changes that have taken place in the character of the population. Of course, a rigid comparison might be made by going over the original records and retabulating them, and by making careful allowances for differences in age, occupation and nationality between that time and the present, but this would involve immense labor, with hardly commensurate results. A general statement, however, can be made.

In 1870 Mulberry St. between Bayard and Park Sts., including what is known as the "Bend," was chiefly inhabited by Irish, and Polish Jews, mostly decent laboring people and small traders. In 1880 there was a preponderance of Italians, and now there are few of any other nationality. The Italians are, perhaps, more frugal than the former occupants of the houses, but also more careless in their personal habits and have more children, who seem particularly prone to succumb to zymotic diseases, especially measles. No. 9 Mulberry, rear, was, in the seventies, the worst place in the ward, an old wooden church turned into a tenement, housing 75 to 100 people of the lowest grade and curiously mingled nationality—Irish, native Americans, Negroes, French, Germans, Greeks, Italians and Portuguese, as I remember. The death-rate was high, and it was finally vacated by the Board of Health, and the owner tore it down. The ground was unoccupied for two or three years, and then a factory was built on the spot, soon, however, turned into a lodging-house. Nos. 32, 42, 44, 46, 48 and 50, on the east side of the street, have made way for modern tenements With these exceptions the buildings are the same ones that existed twenty years ago.



1870—SLUMS INDICATED BY SHADING.

a. Donovan's Lane or "Murderer's Alley"—a notorious lane of escape for criminals. Place changed by demolishing front house and building a high wall across alley at *b*.

NOTE.—The original Five Points are indicated by dotted lines. Worth St. has been cut through to Park Row, making two points instead of one, at the meeting of the southerly line of Park Street and easterly line of Baxter Street. The extension of Worth Street was completed a short time before 1870.

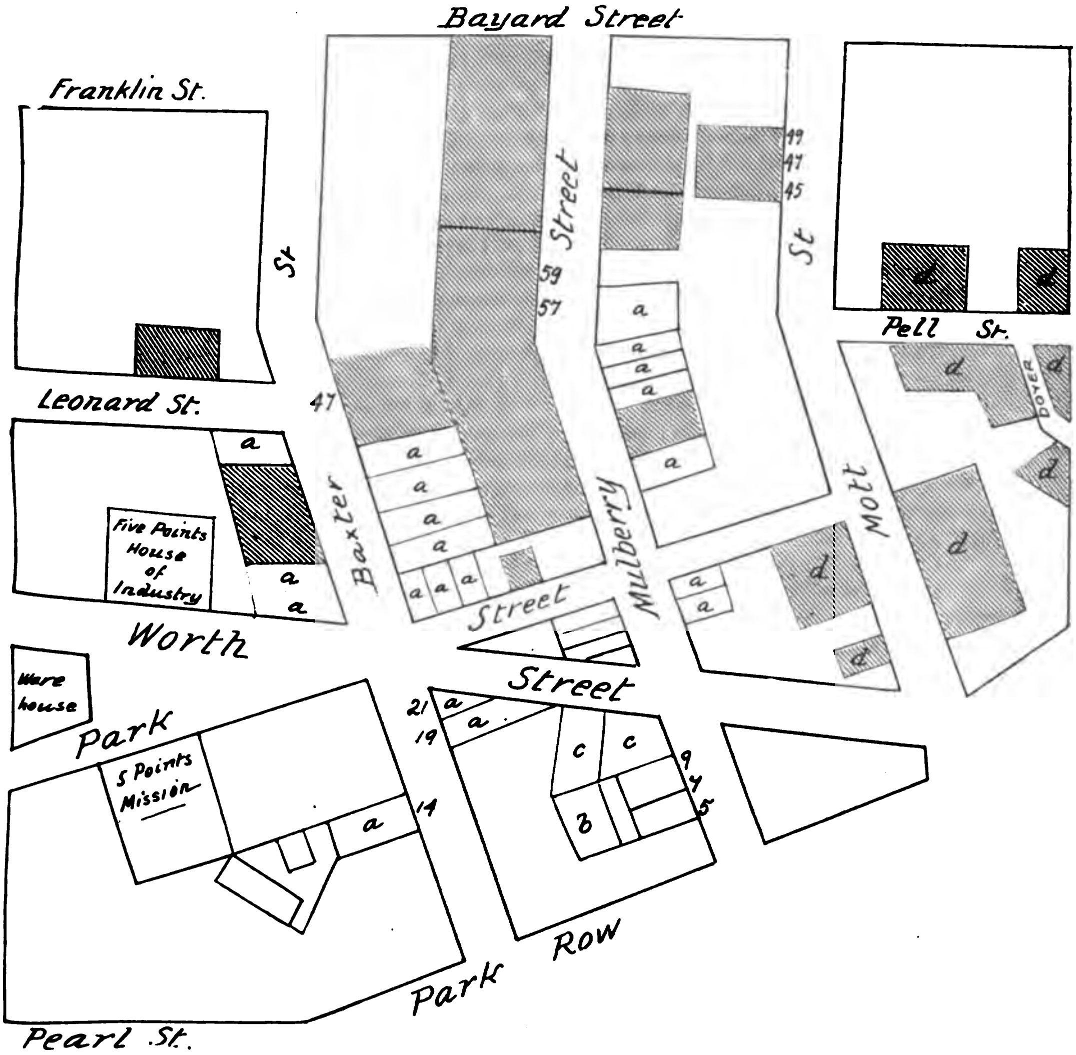
At 21 and 24 Baxter Street was the newsboys' amateur theater, the "Grand Duke's."

At 47 Baxter Street was and is "Bottle Alley."

At 47 Mott Street was and is "Happy Alley.

While the face of this region thus remains much the same, it is now clean or approximately so, instead of dirty. You will smile at this, but most of the sanitary improvement of the locality has been in this direction. The streets are cleaner, the houses are frequently scrubbed and whitewashed, water is more freely furnished, windows have been cut, yards have been graded, flagged and drained, cellars vacated, ventilated and ceiled, iron drains substituted for earthen ones, plumbing repaired and rearranged in accordance with modern ideas, and privy vaults abolished. The death- and sickness-rate probably has not changed so much as such improvements would promise, partly because the health of the outcast popu-

1890—SLUMS INDICATED BY SHADING.



a. New tenements built since 1870 on site of old rookeries.
b. Lodging-house.
c. Factories.
At 57 and 59 Mulberry Street is "Bandit's Roost."
At 37 Baxter Street is "Bottle Alley."
d. "Chinatown."

lation does not depend so much on their environment as on their personal habits, and partly because of the great influx of unacclimated persons, who raise large families of children soon after they get here and find the conditions of living so much easier than in Europe. While the Board of Health has done all that it can do under the law to put these houses in good sanitary condition and keep them so, it is undoubtedly true that many of them are so old, badly planned and musty, that they ought to be demolished, and would be if the Board had the power to bring it about. Individuals, both in and out of public office, became convinced long since that demolition was the only real cure for this condition of things, and the movement to establish a park in this locality was the outcome of that conviction.

I have selected the "Bend" for remark because I was sanitary inspector there for several years and personally acquainted with every house and with many of the tenants. But the "slums" of the Fourth Ward have also changed little in their outward aspect. Few new houses have been built, and few old ones destroyed, but a great deal of money has been expended in trying to better their condition, amounting in some cases to many thousands of dollars, as in the notorious "Gotham Court" at 36 and 38 Cherry St. In the former negro "slums" of Thompson and Sullivan Sts., called "Africa," the negroes have been nearly crowded out by Italians. "Chinatown" in the lower part of Mott St. was not a "slum" in 1870, nor until the Chinese arrived in numbers. It was occupied by very decent people, many of whom lived in their own houses, and there has been no intermediate stage between such residents and the present ones. In spite of attempts by a neighboring church to oppose them by leasing houses and refusing to rent them, the Chinese swarmed in from Park and Baxter Sts., and captured the place, afterward spreading into Pell and Doyer Sts.

To sum up: we are not able to demonstrate just at present that the improved sanitary condition of the "slums" has materially affected the sickness and death-rate; much of what has been done is not evident to the casual visitor, because it is under ground or buried in walls; but no one who visited the "slums" in 1870 and in 1890 could fail to see a diminution of filth and of foul odors in every house he entered, although the character of the population, to a midnight visitor, might not appear much altered; and although the "slums" cover a larger territory than in 1870, the houses occupied are of a better grade, and the external conditions of life for this lowest class of our population are more industriously looked after than ever before.

I inclose, in accordance with your suggestion, rough diagrams of the "slums" of 1870 and 1890. You will notice a decided tendency, when they are pushed out of one locality, to settle down in the first convenient place near by. It is difficult to make such diagrams perfectly accurate on short notice, but these are believed to be pretty nearly so.

Very respectfully,

ROGER S. TRACY, M.D.,
Registrar.

The Present and Future of Medical Science.*

BY CYRUS EDSON, M.D.,
Chief Inspector of the New York City Board of Health.

MEDICINE—I take the term to mean that science, or art, if you will, that essays to effect the cure of diseases by means of substances administered to human beings—may be said to have advanced in a sort of spiral manner. Starting at a point, it has circled about it, slowly increasing the diameter of its rings. It has from time to time gradually enlarged and improved its old methods of diagnosis and treatment; but it has added very few new and original discoveries of value.

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* From the *North American Review.*

Until quite recently our pharmacopœia contained scarcely any remedial agents that were not known in some form one hundred years ago. Indeed, many of them were familiar to the ancients. During the past decade we have seen medicine eclipsed by the advancement of all the other arts and sciences. Surgery has made its greatest strides. Electricity has taken its place as a practical science. Chemistry has given us wonderful discoveries. The fruits of the other arts and sciences have afforded a rich harvest. It seems, in fact, to have been a ripening time for these.

Medicine has not kept abreast of its correlated sciences. In point of fact, it is far in their rear. The reason for this, I think, is twofold. Medical science rests upon a foundation built of stones taken from the other arts and sciences. The first advances in materia medica were the outcome of discoveries in organic chemistry. The chemist extracted the alkaloids, and the physician then recognized them as the active principles of the drugs from which they came.

The discoveries in synthetical chemistry marked another epoch in medicine. By grouping elements obtained from certain organic compounds, chemistry produced for us new substances having medicinal properties of great value. Experiment has proved some of these to have specific curative effects. Electricity has furnished us remedial agents, and has enlarged our means of diagnosis. Improvements in the art of manufacturing microscopic lenses have enabled us to see the germs of diseases, and have opened up to us the great field of bacteriological chemistry that now engrosses the attention of the medical world.

Through the agency of the microscope we are now beginning to understand the real cause of disease processes, and the chemico-vital forces evolved by nature to effect their destruction.

In short, the dependence of medicine upon the other arts and sciences has kept its development in their wake. But there is another reason for the tardy development of medicine—an even more powerful one than that just given. It is the great difficulty of proving that certain effects are due to certain causes, whether the result of the given medical procedure is *post hoc* or *propter hoc.* So many factors operate to produce effects that it is often impossible to determine the real causative one. In no other science is it so easy to mistake coincidence for cause.

The proverbial disagreement of doctors is due to this. Homœopathy, faith cure and other medical crazes are fathered by it. The anti-vaccinists, the anti-contagionists, find their arguments in mistaken premises. It is on account of this that medicine is, and probably always will be, an inexact science, and that theory has been productive of so little.

The few specifics (by specific I mean a medicine that has a certain curative effect upon a particular disease) have all been the outcome of experience from chance observation, and not of theoretical work. No science, however, is so rich in theories. It is significant that these in the main have been advanced to account for empirical facts. Innumerable have been the theories endeavoring to account for the action of cinchona, a drug for the existence of which we are indebted to the instinct of the Peruvian Indians. The theories attempting to account for the action of every medical agent and for the contagion of every disease are legion.

The differences in the so-called "temperaments" of individuals must always tend to prevent the exact in medicine. The old adage "One man's food is another's poison" finds its origin here.

It seems probable that in the near future the hypodermic syringe will be the principal means of administering remedial agents. This little instrument has already done something toward reducing the inexactness of medicine to a minimum.

The most remarkable thing in medical science to-day is the fewness of specific remedies. The comparatively recent discoveries in physiology and in the causes of diseases have not brought forth medicines that will act as sure cures. We are almost as powerless to cure the more severe types of diseases to-day as we were twenty years ago. Our immense credulity is a witness to this, however strongly some of us may deny it. We are ready to accept the wildest assertions as proved facts. We have believed that condurango would cure cancer; that an elixir of life had been discovered; and now we think the specific for tuberculosis is in our hands, and this opinion is based almost on the assertion of one man.* The great wish that these things should be true is the father of the thought that they are, and it makes us deceive our very selves.

I know of no more trying position than that of the physician who, having in vain exhausted all the means known to him to save his patient's life, is compelled to watch him die without being able to do anything to avert the end. Is it to be wondered at that in our helplessness we grasp at straws? I would not be taken in these statements as belittling medical science and conveying the impression that the physician is useless. Far from it. We hold in our hands much that the test of time and experience has shown to be of great value in ameliorating diseased conditions.

The future of medicine, and especially of preventive medicine, seems very bright. It seems probable that the so-called "preventable diseases"—that is, the contagious and infectious maladies—will in time be actually avoidable.

The "preventive viruses" originated by Jenner in the discovery of vaccination, and added to by Pasteur in the discovery of anti-rabic and anti-charbon virus, will play a most important part. The causes producing and the conditions favoring these diseases are well known. It seems probable that the bacilli causing them produce in some way poisons that are destructive to themselves, and that we shall sooner or later be in possession of means whereby we can isolate and utilize these principles, not only as preventive, but also as remedial, agents.

It is not likely, however, that our old methods will be superseded, or that any of them will be abandoned. It is not improbable that all the acute diseases, and many of the chronic, will be found to be caused by germs. I do not think we need fear that new maladies will appear to take the place of those that we may in the future be able to control, and so keep the results of beneficent discoveries from effecting good.

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* Written January, 1891.

Recent researches have shown that nature effects the destruction of germs in several ways. The phagocytes, whose function was comparatively recently discovered by Metchnikoff, are probably the most powerful of these. The phagocytes are found in the blood. They are whitish spherical bodies, considerably larger than blood-corpuscles. They are found in great abundance in and about the seats of inflammation, and were here first observed by Metchnikoff to absorb and destroy the bacteria causing the disease processes. The experiment made by him to prove his observation is most interesting and ingenious.

It is not unreasonable to predict that we will learn how to favor the production of these organisms, and in this way assist nature in her fight against disease more directly and to the purpose than at present. The soluble ferments are thought by competent observers to be inimical to the bacilli of diseases. We may possibly be able to apply the means whereby these may be produced in infected systems. We can only conjecture, at the best, what the harvest of the discoveries in the field of bacteriology will be. Let us, at any rate, hope that our dreams of its richness will be realized.

We must not let our hopes deceive us into expecting too much, for it has been said, "Thus far shalt thou go and no farther;" and it would seem as if obstacles had been placed in the way of medical science which all the force of man is powerless to remove. The most difficult thing on earth for a man to understand is himself. The wonderful machine of brain and muscle, and the strange chemico-vital forces that supply energy to it, must, it seems to me, in the very nature of things, always remain to man more of a mystery than anything else material that he may have to do with.

After all has been said, it must be admitted that a proper observance of the rules of personal and public hygiene on the part of every individual belonging to the civilized world would do more to effect a reduction of the death-rate, and prolong the average duration of life, than any discoveries in the cure of diseases that at present seem within the bounds of possibility.

How to Leave Off Corsets.

BY MARY A. ALLEN, M.D.

"WHAT would you advise me to do in regard to leaving off my corset? I have worn one for thirty years, and when I take it off I feel 'all gone;' cannot work at all, in fact can hardly sit up until I put on the corset again. Is there any special style of waist you would recommend to take the place of the corset?"

The foregoing communication, just received, embodies the experience of multitudes of women, though the deduction drawn from their feelings is not that they would like to dispense with the corset as something hurtful, but rather that it ought to be retained as something beneficial. First and most important is the necessity of supporting all underclothing from the shoulders. Not a single garment, even the smallest and lightest, should depend from the hips. This statement may seem rather ultra, but let any woman for months wear every garment supported from the shoulders, and then let her fasten even a pair of muslin drawers around her waist, and she will soon begin to feel tired and dragged down, possibly without understanding why, until she recalls the unwonted weight about her hips, and the support of the garment from the shoulders will at once remove the sense of irritation and discomfort.

There is no way so effectual to relieve the hips of all weight of underclothing as by adopting the combination garment, whereby the chemise is discarded, and the drawers and waist are united. Skirts, which should be as few and light as possible, may now be fastened to an underwaist or supported by suspenders. This waist, as well as the dress, should be so loose that the deepest possible breath may be drawn without feeling any restriction from the clothing.

The clothing having been thus remodeled, what then? Will the patient at once feel comfortable, and as well able to work as in the corset? By no means. Simply to give the muscles freedom of action will not at once give them tone and vigor. They must have time and judicious care. The speediest and most comfortable way to dispense entirely with the corset would be to put the patient in bed for a week or so. During this time she should have massage treatment applied directly to the weakened muscles, that is, those muscles should be rubbed, pinched and thoroughly manipulated until the blood coursed through every part of them with force and rapidity.

This passive exercise does not exhaust the nerve power of the patient, yet it builds up muscular tissue by increasing elimination of worn-out material, and consequently creates a demand for new material to replace that which has been removed. Thus the muscles grow and regain strength. Electricity understandingly employed tends also to the same end. After a few days of this entirely passive exercise the patient should begin voluntary use of these muscles in light gymnastics. Then the remodeled style of dress could be worn a short time daily while she moved slowly about the room, being careful not to prolong her exercise to the point of fatigue.

It would be found necessary to remodel even the dresses, as without doubt they would be much too tight. Under the new régime the ribs would expand and the waist become larger. I have seen patients amazed at the change in the figure made in six weeks of such treatment. They had "never laced" (of course not), and could not comprehend why the dresses they had worn with comfort should, after such a short liberation from corsets and snug dresses, have become uncomfortably tight. Increase of size of waist is inevitable under this treatment; but so, also, is increase of health, strength and general comfort, beauty of figure, grace and elegance of carriage.

Subterranean Paris.

THE WATER SUPPLY AND SEWERAGE OF THE FRENCH CAPITAL.

BY DR. PROSPER DE PIETRA SANTA,
Editor-in-Chief of the *Journal D' Hygiène;* Laureat de L'Institut (Académie des Sciences).

[SPECIALLY PREPARED FOR THE ANNALS OF HYGIENE.]

IN response to your kind request, I propose to lay before your readers a description, as accurate as possible, of the hygienic problem of the drainage system of the city of Paris, and, as belonging to it, that of the works of our most distinguished engineers—Belfrand, Couche, Mille, Alfred Durand, Chaise, Behman—Alphand acting director of the system.

All travelers, all artists and all scientists who visit the grand capital know perfectly well the great interest which underground Paris offers, and they look upon it, amongst the various impressions of their trip and the many things to be remembered, as one of the most curious episodes and one most worthy of admiration.

Having had the honor to be a member of the expert commission on the drainage of the Seine River, that has given to all questions concerning the sanitary rules which should guide cities their basis or actual solution, I believe myself, in a measure, entitled to relate in an impartial manner facts of the past, of the present and also those referring to our future aspirations.

Fonssagrives, who marches at the head of this pleiad of modern sanitarians who have given to sanitary science its true directions, formulated in 1874 as an aphorism on public hygiene:

"That a city progresses in health in the same ratio as its system of underground canalization, its construction and drainage progresses."

Following this order of ideas, any study concerning the hygiene of any community of human beings must necessarily comprise the subsoil and the water conduits and sewers traversing the former, for the well-being and the health of such a community demand these essential conditions:

(1) That the water be of good quality and in abundance.

(2) The promptest possible discharge of its products of waste and impurities.

Mr. Haussmann, the distinguished prefect of the empire, the instigator and apostle, with Belfrand, of this collection of magnificent works, made the following definition of the *role* which sewers play:

The underground galleries, the organs of the great city, should work like those of the human body, without showing themselves in the daytime; the water should be pure and clear; light and heat (without mentioning for the future the motor power which drives these under the form of compressed air) will there circulate like the various fluids whose motion and existence keep up life. The secretions will be mysteriously discharged then, and maintain the public health without interfering with the daily life and the external beauties of the city.

The realization of this programme was to transform the sewers, "notorious and unhealthy causes," to the most active agents of sewerage on the one side by serving as indispensable evacuations of all products of waste, which always are present where a smaller or larger number of living beings congregate; and, on the other hand, to serve as a means of communication for the sewerage of the public streets, and to accomplish for the good of the greatest number certain functions of life, which, when practiced on the surface, are not only uncomfortable, but also become nuisances.

THE WATER.

The distribution of abundant water of a good quality and purity constitutes for city communities the first and most important element of health. If the water is essentially indispensable for the individual, it occupies a weighty place in the life of populations; for, considering the various purposes for which it is needed, it forms one of the first conditions of the health of cities, and one of the principal elements of their prosperity.

Grimaud de Caux comprehends under the general term and significance of *public waters* an element of the first class, and the most important of all that form the basis of the sustenance of the material life.

"In good health as well as in bad," wrote Columelle as early as the first century of the Christian era, "none of us can prolong his life without water of good quality."

"Without being taxed with exaggeration," writes Jules Rochard, "one must admit that the unhealthiness of cities grows with the increase of its population; but if this be so, one naturally asks how the latter can reach millions, as in Paris and London, without transforming these into immense centers of infection, as actually occurred in the middle ages, when the large cities of France and Italy were ravaged with epidemics almost without interruption; but that is the triumph of hygiene and civilization."

The employment of water in cities comprises the distribution in houses, in streets and for technical purposes; the *private service*—for cooking purposes, individual and general, bath-rooms and water-closets; *public service*—washing away of street dirt, cleaning out sewers, street and chaussée-sprinkling, for the supply of parks and public gardens and squares, ornamental fountains, public wash-houses, pissoirs (urinals), fire-plugs, etc.; the *industrial service*—all water needed for dissolving purposes and as vehicles for other matters in sugar-houses, tanneries, dye-houses, chemical factories, manufacturing and industrial establishments, gas-houses and laundries, then in all large institutions used as a motor power, for drinking, supplying machines with steam, etc.

To speak with Couche, of all the cities in the world Paris is the one where the distribution of water is the most perfect, and on the largest scale. It is, in fact, the most effective and unique service, which, in its whole extent, insures the supply of houses and of the streets, and also fulfills the domestic, public and industrial requirements of a population of two and a half millions.*

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* Last census of 1891 gives the exact number of inhabitants as 2,447,957.

For this supply it has at disposal five sources, of which three are considerable: the Canal de l'Ourcy, the aqueduct of D'hins and that of Vanne.[*]

Two artesian wells (Grenelle and Passy), of over 500 meters depth.[†]

Twenty-two pumping stations with forty-five steam-engines and twenty-four hydraulic motors, representing over 4,000 horse-power, actually employed.

Reservoirs for distribution, seventeen in number, all of masonry work and most of them covered, have a capacity of nearly 600,000 cubic meters. An eighteenth, where three stories of water will rest one over the other, is being constructed at this moment.

The public canalization has a length of not less than 2,000 kilometers; the apparatus for distribution are in the public streets and the promenades, to the number of 17,000; and there are 66,000 water-renters with 50,000 water meters or indicators.

The quantity of water daily distributed attains a medium of 42,000 cubic meters, and occasionally rises to 500,000.

To insure for such a vast collection the needed unity of system a special telegraphic service exists, which never ceases "to transmit from the remotest ends to the center and from the center to the furthest limit of distribution any demands made for supply, and all instructions to be sent out, and to register from hour to hour the quality passing through," whereby it must be remembered that some substations are 160 kilometers distant (Couche.)

Paris, which twenty years ago had not water sufficient for the private and industrial purposes, must to-day be considered of all European cities as the one occupying the first place so far as the quantity of water is concerned which is distributed to private houses, while the quality used for public and private demand is still below that which those great works are in a condition to supply.

This double result has been obtained, thanks to the carrying out of the programme laid down by the masterhand of Belfrand, viz.: the double canalization and the absolute division of the distribution in two completely distinct services—*the private service*, with the water obtained from the sources of D'hins and Vanne retained in reservoirs, and pure, limpid, cool and refreshing (9-11 centigr.), carried to the center by the aqueducts formed in the covered reservoirs; *the public service*, which has at its disposal the water of the Seine and Marne Rivers, that of the canal of Ourcy (navigable and open on top), and, finally, that of the ancient derivates of Arcueil and Pres-Saint Gervais.

When the question of the quantity of the supply of water needed for a city has to be determined, it is not sufficient simply to count the number of inhabitants and to calculate the quantity by way of simple division (total quantity of water divided by the number of inhabitants), it is also necessary to take into

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[*] The aqueducts of the sources of Vigne and Verneuil (Department of Eure-et-Loir), in course of construction, should furnish the east of Paris (great reservoir of Montretout, Saint Cloud) with an additional supply of 120,000 cubic meters per day.

[†] Two other artesian wells are being constructed in the North on the heights of Belleville (Hebert Square), in the South in the quarter of La Butte aux Cailles.

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consideration the climate, the habits, local conditions and the density of the population.*

Hygienists confirm that for large cities the quantity of the supply must never be below 200 liters per person per day. If we take the same tables which have served us to determine the water distribution and the number of inhabitants as given by the last census, we find that at the present day in Paris every person is supplied with a daily quantity of 240 liters.†

The adjoined diagram shows the distribution of the water actually used in Paris among the different services. It plainly indicates the actual predominance of the public and industrial services over the private service. We see from it that of 80,000 houses, 87 per cent. of which in reality have a conduit (a main) in front of their houses, about 23,000 pay no water taxes, because they have not rented the supply.

But thanks to the following circumstances this state of affairs will be changed very soon: the increase in the volume of water by the additional supply obtained from Vigne and Verneuil, and by forcing the paying of water rents and the securing of the supply, as already passed in principle by the town council of Paris.‡

[TO BE CONTINUED.]

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*In the beginning of this century Paris had only 8,000 cubic meters of water to distribute to 600,000 inhabitants; 6,800 were pumped from the Seine River, the rest was obtained from wells and other sources at the level of the surface upon which the city itself is constructed.

† In round numbers follow some proportionate figures with the name of the observers, cities, period, etc.

	Inhabitants.	Liters.	Authors.
Rome	300,000	1,000	Bazalgette
Dresden	220,000	228	Grahn
St. Petersburg	700,000	95	Bazalgette
Berlin	1,120,000	75	Grahn
Naples	500,000	70	Bazalgette
Madrid	477,000	15	(before 1870)

‡ In the following we publish the table, which the Government presented to Councils in December, 1889:

		Cubic meters.	
1. Public service	1. Water from Ourcy Canal	140,000	
	2. Water from Arcueil and Artesian Wells	10,000	
	3. Water from Seine and Marne Rivers	300,000	
			450,000
2. Private service	1. Water from D'hins	20,000	
	2. Water from Vanne	120,000	
			140,000
	Total		590,000
	Added the supply from Vigne and Verneuil, say		120,000
	And we obtain a general total of		710,000

The Relation of Privies and Cess-pools to Wells.*

BY EDWIN STEWART, M.D.,
Of Mendon, Mich.

I CONFESS to having hydrophobia. I am afraid of well-water in villages, because I believe it contains organic matter that is unhealthful and unclean. The simple statement of the subject for discussion is enough to turn one's stomach. Think of it! "The relation."

Now, the source from which all our well-water comes is from the ground-water or rainfall that has run over or filtered through the soil or earth, which is saturated with filthy cess-pools and honeycombed with privy-vaults. It is a mistaken idea that some people have that *their* well is supplied by a vein or stream. As a rule, the depth of all wells to the top of the water is about the same from a common level. No crotched limb of peach tree or hazel brush can find water at any other level in this country. This ground-water is like an underground lake, and is nearly as free to move in any direction as in a lake not covered with twenty feet, more or less, of sand and gravel. A veteran well-digger says that while working in a newly bricked-up well, four rods from a driven well on the opposite side of the house, he could see the water move at his feet with every stroke of the pump-handle of the driven well.

This water moves then; and, although there is a slow current toward a lower level, it is easily turned laterally from a direct course by a vacuum or any disturbance of the current. So, then, our bucket or pump may bring nearer to us the contents of all our neighbors' leachings.

But water going down from the surface, cess-pool or vault does not always go straight down to the underground lake, but it makes for the nearest lower water level. A gentleman rebuilding after a fire, while excavating to enlarge an old cellar, unearthed an old cess-pool or slop hole. He found a line of discolored greasy earth leading downward and to the northeast toward the bottom of a well two or three rods distant, although the current of the ground-water is toward the south. We must not flatter ourselves that all the filth about the back yard is going directly to the lake or river, or straight down to the current; but, if there is a well near, it will make straight toward it.

Almost every village lot has two important institutions: a vault and a well; what is to hinder a communication? Nothing but some loose sand and gravel, which are not a hinderance. The well cannot go to the vault, for it is deeper; but the vault may go—*must go*—to the well, and the deeper the vault the easier to go to the well. I have known these two institutions so nearly together, in two instances, that their proximity could be detected by the smell of the water from the wells. But there is an easier way to demonstrate these impurities. Alum is used to cleanse water for mechanical purposes, then why not to detect these impurities? It curdles or precipitates the organic matter, which then settles in the bottom. Try it. Take two clear glass bottles, of about four ounces capacity each, fill one with water from your well, the other with pure rain-water, and mark them. Add a piece of alum to each, as large as a kernel of wheat or corn, and set them away over night. You will find in your well-water a sediment that would spoil your breakfast if you should even think of drinking it. Now, *too much*—how much?—is known to cause sickness, protracted fevers, and it is my belief that a large share of mysterious maladies and indispositions for which no known cause has been assigned, is caused by the impure water we drink. And the evil will go on increasing as the village grows older and the surface earth becomes more and more saturated and more unfit for a filter.

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* Read before the State Sanitary Convention at Centreville, Michigan.

Then the cess-pool and the vault or the well must be—will be—abandoned. Which shall it be? The short and easy way is to abolish, annihilate the cess-pool, and supersede the abominable nuisance—the vault—by the inodorous and more cleanly and convenient earth-closet.

The Prevention of Typhoid Fever.*

BY HENRY B. BAKER, M.D.,
Secretary State Board of Health of Michigan.

TYPHOID fever causes about ten times as many deaths in Michigan as smallpox does—probably about 1,000 deaths per year—and most of these deaths should be prevented. The greatest number of deaths from typhoid fever are of persons in the prime of life, and this should prompt to greater efforts for the prevention of this disease.

The most common modes of the spread of typhoid fever are not the same as of smallpox and consumption, consequently the measures for its restriction and prevention are not the same. The pamphlets on this subject issued by the State Board of Health, and freely distributed here, contain plain directions how to prevent typhoid fever, and how to restrict its spread. It is now believed that typhoid fever is most frequently spread by means of the drinking water, that the microscopic cause of the disease is probably reproduced in the bodies of persons who have the disease, and that this specific cause gains access to the drinking water by filtering through the soil, and sometimes by being washed into wells and streams from which the drinking water is drawn. The noted instance at Lausanne, Switzerland, where the discharges from typhoid fever patients were thrown into a small stream, which disappeared by sinking into the earth and gravel, and reappeared about a half mile distant as a mountain spring, the clear water of which caused typhoid fever in 144 persons, is instructive, and is useful for us to hold in mind as illustrative of how the disease may be spread. The most usual mode of spread is probably by way of the privy vault and the neighboring well. The facts concerning the outbreak at Lausanne prove (and the same has been indicated in other instances) that the cause of typhoid fever sometimes passes great distances by way of the underground water flowing

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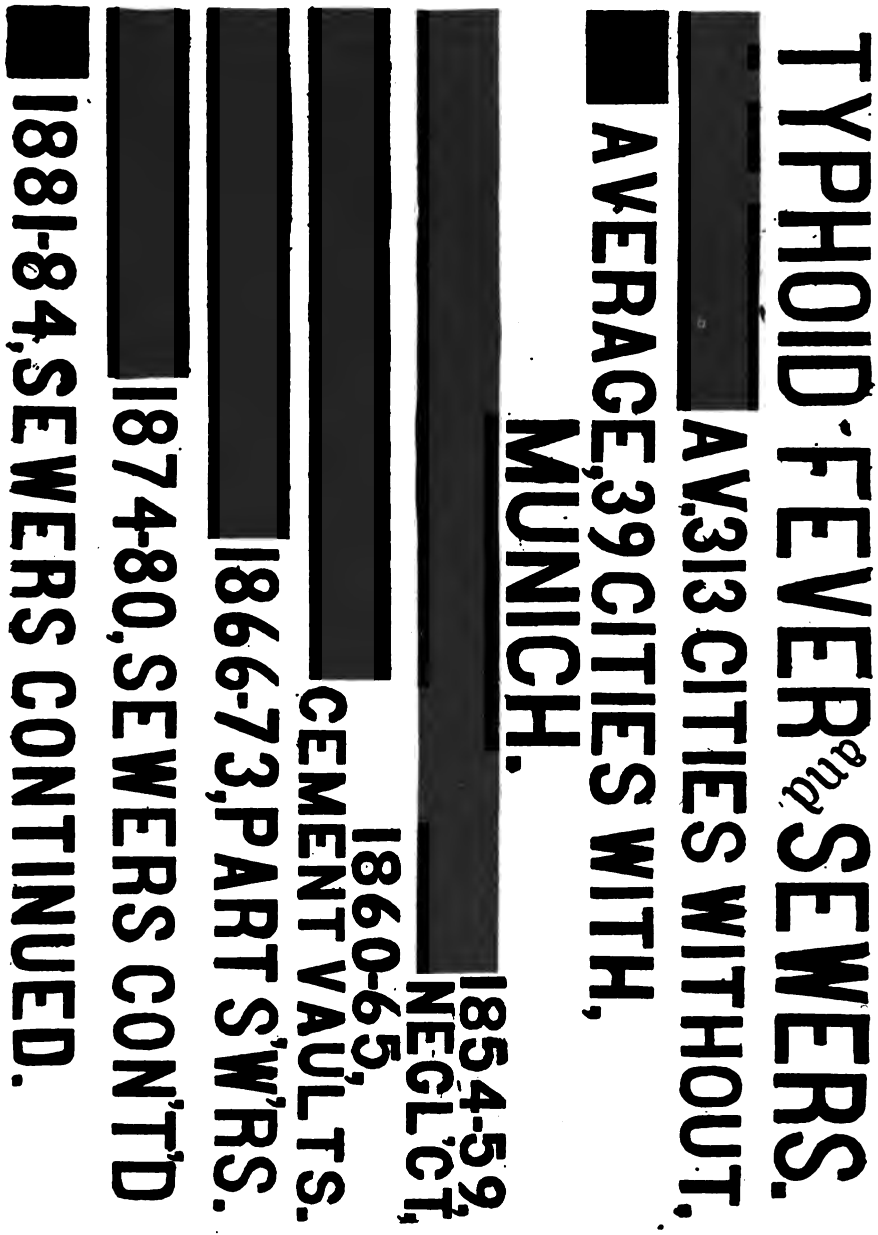
* Read before the Sanitary Convention, held at Centreville, Mich.



through strata of gravel. We must not forget, however, that typhoid fever may be spread through the air, that the supposed "germ" of the disease is not destroyed by once freezing, and is not yet known to be destroyed by ordinary

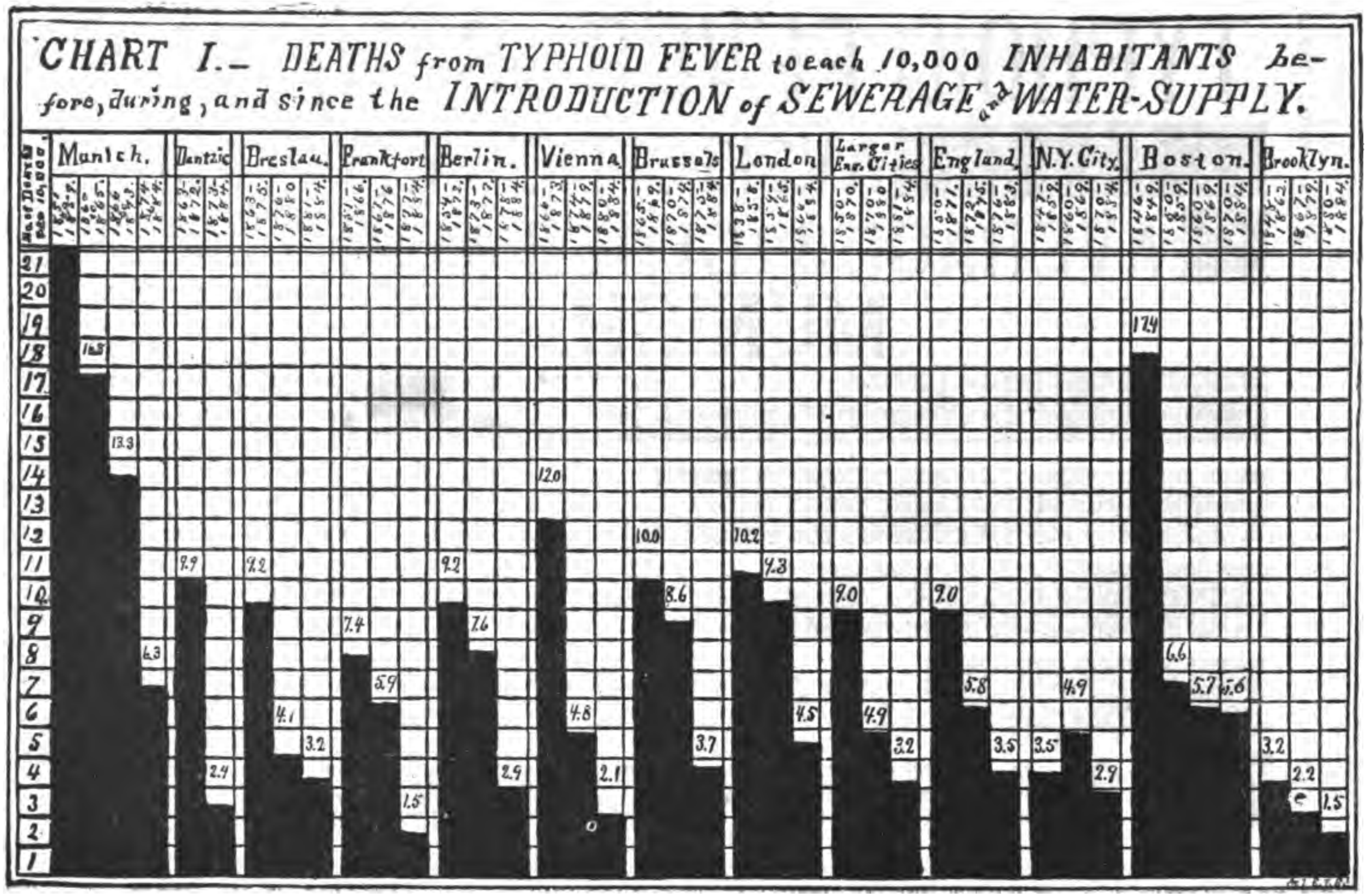


CHART I.— DEATHS from TYPHOID FEVER to each 10,000 INHABITANTS before, during, and since the INTRODUCTION of SEWERAGE and WATER-SUPPLY.
No. of Deaths to 10,000.
Munich.
1852-1859.
1860-1865.
1866-1873.
1874-1884.
Dantzic
1863-1872.
1873-1884.
Breslau.
1863-1875.
1876-1880
1881-1884.
Frankfort
1851-1866.
1867-1876
1877-1884.
Berlin.
1854-1872.
1873-1877.
1878-1884.
Vienna
1866-1873.
1874-1879.
1880-1884.
Brussels
1865-1869.
1870-1872.
1873-1884.
London
1838-1858.
1859-1865.
1866-1884.
Larger Eng. Cities
1850-1870.
1870-1880
1881-1884.
England.
1850-1871.
1872-1875.
1876-1883.
N.Y. City.
1847-1852.
1860-1869.
1870-1884.
Boston.
1846-1849.
1850-1859.
1860-1869.
1870-1884.
Brooklyn.
1845-1862.
1867-1879.
1880-1884.
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
16.5
13.3
6.3
9.9
2.4
9.2
4.1
3.2
7.4
5.9
1.5
9.2
7.6
2.9
12.0
4.8
2.1
10.0
8.6
3.7
10.2
9.3
4.5
9.0
4.9
3.2
9.0
5.8
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4.9
2.9
17.4
6.6
5.7
5.6
3.2
2.2
1.5

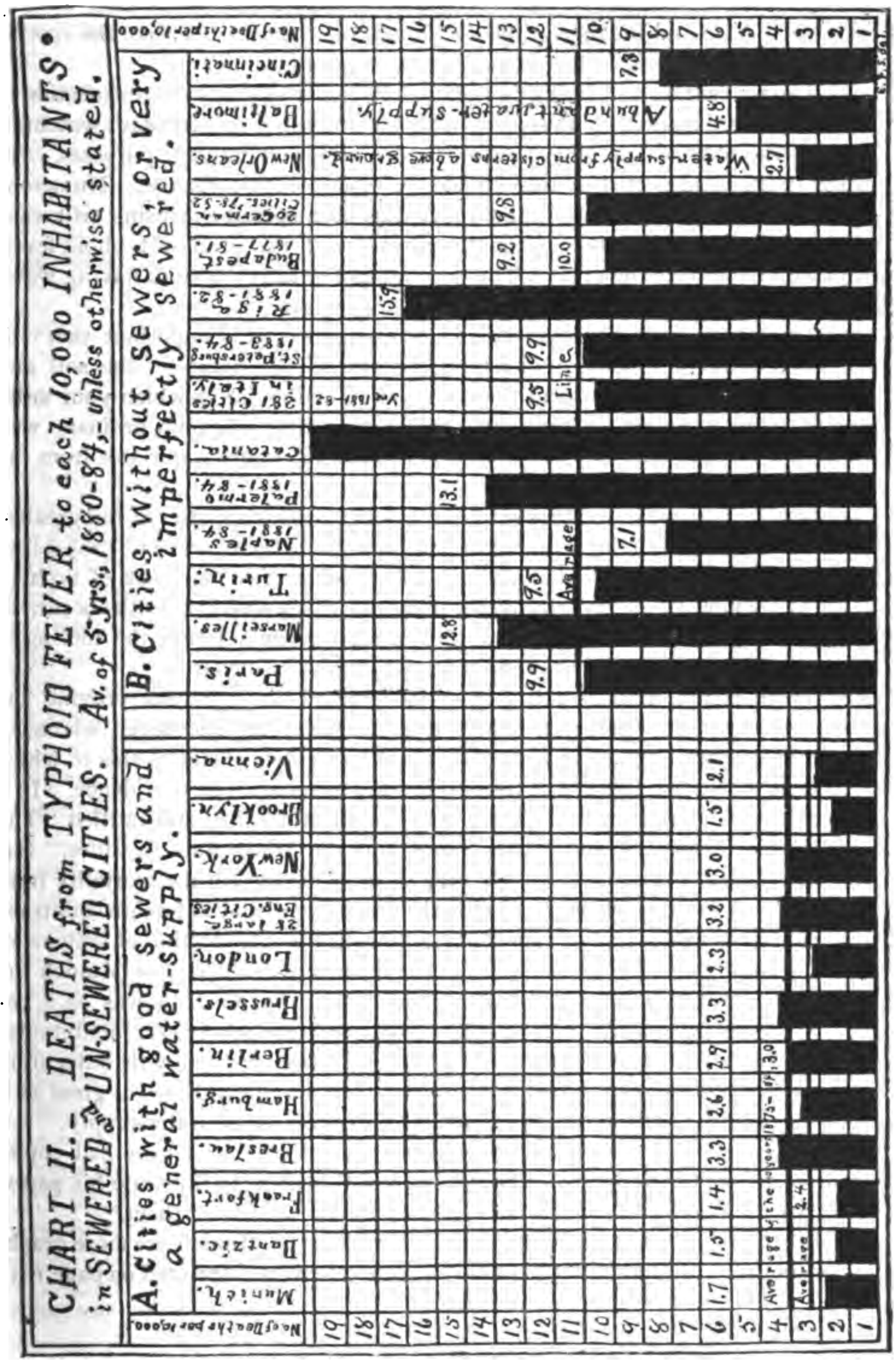
CHART II. — DEATHS from TYPHOID FEVER to each 10,000 INHABITANTS in SEWERED & UN-SEWERED CITIES. Av. of 5 yrs., 1880-84, — unless otherwise stated.
A. Cities with good sewers and a general water-supply.
B. Cities without sewers, or very imperfectly sewered.
No. of Deaths per 10,000.
Munich. 1.7
Dantzic. 1.5
Frankfort. 1.4
Breslau. 3.3
Hamburg. 2.6
Berlin. 2.9
Brussels. 3.3
London. 2.3
28 large Eng. Cities 3.2
New York. 3.0
Brooklyn. 1.5
Vienna. 2.1
Average 2.4
Average of the years 1873-81, 3.0
Paris. 9.9
Marseilles. 12.8
Turin. 9.5
Naples 1881-84. 7.1
Palermo 1881-84. 13.1
Catania.
281 Cities in Italy. 9.5
Av. 1881-82
St. Petersburg 1883-84. 9.9
Riga 1881-82. 15.9
Budapest 1877-81. 10.0 9.2
20 German Cities '75-'82 9.8
New Orleans. 2.7
Water supply from cisterns above ground.
Baltimore. 4.8
Abundant water-supply.
Cincinnati. 7.3
Average Line
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

drying. We know that the microscopic germ of consumption is most dangerous when dried and floating in the air we breathe. It may be that the specific cause of typhoid fever is dangerous in the same way.

The prevention and restriction of typhoid fever requires the disinfection of all bowel discharges from those sick with such disease, and constant watchfulness of the sources of supply of water for drinking and culinary purposes. All water from a suspected source should be boiled before its use. Numerous instances are reported where typhoid fever has been spread by rinsing milk cans with water apparently pure, but really infected with the germs of typhoid fever, capable of infecting the milk. This teaches us the importance of having water free from typhoid infection for all household purposes.

Typhoid fever is a disease which, in my opinion, it is important that citizens of Centreville should understand, because of the nature of the soil and earth underlying this place and the surrounding country from which your milk-supply comes. Sooner or later there will come a time when no ordinary well in such a place as this can be safely relied upon to supply water free from the cause of typhoid fever.

But the general water-supply of cities and villages is a matter of the greatest concern, and it should be procured from places where there can be no probability of immediate or remote contamination. The well-known outbreak of typhoid fever at Plymouth, Pa., where over a thousand cases and 114 deaths occurred, is apparently an illustration of how great a calamity may follow the fouling of a general water-supply by the specific cause of typhoid fever.

There is not time at my disposal to give all the evidence proving the enormous saving of human life from the ravages of typhoid fever, which, in recent years, has been accomplished because of such knowledge as this to which I have just alluded; but I wish briefly to refer to some of this evidence. In a pamphlet published by the Michigan State Board of Health, and entitled "The Influence of Sewerage and Water-Supply on the Death-Rate in Cities," Mr. Erwin F. Smith shows conclusively very great reductions in the mortality from typhoid fever in many of the great cities in this country and in foreign countries, the reductions in the typhoid mortality following the introduction of systems of sewerage and general water-supplies. For instance, in the city of Munich the death-rate from typhoid fever in the period from 1854 to 1859 was 24.2 per 10,000 inhabitants, while in 1884 it had declined to 1.4 per 10,000 inhabitants; that is, before the city was sewered, and while it was supplied with water from wells, the mortality from typhoid fever was about seventeen times as great as it was after the city was well sewered and had a good general water-supply.

To give you a mental image of this important subject, I have had copies made of two diagrams prepared by Mr. Erwin F. Smith, to illustrate his paper, and they are here for distribution to such of you as will study them.*

Details relative to the decrease of typhoid fever in Munich are more graphically shown in the diagram "Typhoid Fever and Sewers" (printed on page 103).

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* These diagrams are printed on pages 104 and 105.

If there should be in Michigan such a reduction of the mortality from typhoid fever as was secured in Munich through better sewerage and water-supply, there would be a saving of over 900 lives per year, and over 9,000 cases of sickness per year. To point out how such favorable conditions for healthful existence may be secured, is one of the objects of such sanitary conventions as this.

Restriction and Prevention of the Dangerous Communicable Diseases.

From the Standpoint of an Undertaker.*

BY FRANK S. CUMMINGS,
Of Centreville, Michigan.

It seems to me that no calling gives to its followers more extensive opportunities for close observation of the dire results of careless or ignorant exposure to the dangers of disease, than that of caring for and burying the dead.

Having all my life been engaged in that calling, and having had many matters of importance and interest forced upon my attention, I shall try to give you a few pages from my own experience. Although unable to discuss the question with the learning of a scientist, I may be able to present some facts from a practical standpoint.

I know with many it is popular to scoff at the care and attention given the dead body. It has been the house of the soul and the image of the Creator, and as such is entitled to proper care and disposal. But in its disposal it certainly should not be permitted to endanger the health of the living.

I shall not confine myself to observations concerning communicable diseases, but shall deal with sanitary and health conditions from the general standpoint of a funeral director; this latitude having been given me.

The funeral director is called upon at a time when all the resources of modern medical science have been or should have been exhausted and failed. Death has claimed its own.

Mother Nature is no procrastinator. She has decreed that the instant life ceases, decay begins; and, if uninterrupted, she resolves the constituent parts of the body into the original elements in quick time.

During the process of decay, unless proper precautions are taken, great danger to the living exists. The slightest inoculation means blood-poisoning and frequently death.

We believe that more sickness and fatality are caused directly and indirectly by careless or thoughtless contact with dead bodies, and by the inhalation of poisonous gases exhaling from them, than is generally realized.

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* Read before the Sanitary Convention at Centreville, Michigan.

Now let us take a case where death has ensued. We are called to care for the remains. We very frequently find them in a small and illy-ventilated room, fetid with the odors of the sick, vessels sitting about containing excreta from the now dead person, and the room crowded with relatives overwhelmed with sorrow, and whose systems, because of the intensity of their grief, sleepless nights and overwrought conditions, are in just the state to invite the invasion of disease.

Perhaps some may think this picture purely imaginary, but I assure you it is not, as any person of experience can testify. Indeed, it is rather underdrawn than overdrawn, for in addition to this I have frequently seen a bereaved widow, a childless parent, or some other near and dear relative, in a paroxysm of grief, fling herself or himself upon the dead and press the lips upon the unresponsive ones, which are, perhaps, stained with the life-blood that flowed from them but a short time before.

Many times have I shuddered at the recklessness displayed. But what can be done? Persons of a cold, stern temperament will say, "Prevent it by force, if necessary, but we believe a little reasoning will be sufficient." It would be, if all persons were constituted like yourselves, but they are not, and either course with a person of an excitable hysterical temperament would be a failure; for them death is an enemy who has taken from them all the brightness and joy of life, and the future is thick darkness. Any expostulation or reasoning that life or health is being exposed is more than useless, for it presents the thought of reunion with the departed, and transforms death into a friend, which causes in her utter abandon a multiplication of the caresses and complete disregard of all precaution. And who would advise force? It would make for the one resorting to it an implacable enemy, and require a heart of stone.

Then what shall be done? The best plan is to have some one who has the complete confidence of those mourning, quietly conduct them from the room to some private apartment as soon as possible after the death has occurred, calming and soothing them by promises of free access to the room as soon as the body has been placed in proper condition.

Then the person in charge, if he is capable, will open the windows and permit a free circulation of fresh air for a few minutes, nearly closing them again so the health of the workers shall not be endangered. Then the body should be thoroughly cleansed and rubbed dry, removing all the death sweat, which is nature's first step toward decomposition, and which is in itself a dangerous poison. Then wash with some thorough disinfectant, and carefully permit a quantity to find its way through the mouth into the stomach, disinfecting its contents and thereby preventing the escape of poisonous gases. To this treatment will be added other treatment not necessary to explain here.

Having attended to the dead, the attention should next be given to the room. Have all the bedding, clothing and chamber furniture removed, and give directions for its proper ventilation and, in cases of communicable diseases, disinfection; and, where the articles are of a nature to require it, insist upon their being at once destroyed or buried, giving fire the preference; and have all excreta buried in an unfrequented place, far away from any possible communication with water-ways or wells.

Then, with some good disinfectant, spray the carpets, the ceiling, the walls and the curtains, and hang cloths saturated with the disinfectant about the room. Be very thorough; and, from a long experience, I have no hesitation in saying a child may with impunity be taken into that room and be permitted to see and touch the remains, even though diphtheria may have been the disease. I know many will take issue with me on this; but I know it may be safely done, although I would be far from advising it, on the principle that prevention is better than cure.

Having done all this, the relatives may be given free access to the room again. Kissing the dead is a dangerous practice, but if it is now indulged in, nine-tenths of the danger has been removed by your thoroughness. I have known instances where a breaking heart has been soothed and comforted by such a caress, and serious results avoided. Next, the funeral director should care for his own person, and see that his garments are so treated as to make it safe for him to again mingle with the public.

Right here, while speaking of the care of the dead, I cannot refrain from entering a plea for modern embalming. There is no mutilation or horror about it. It is on a par with the civilization of the nineteenth century. I believe that, from a sanitary standpoint, it marks an epoch in the care of the dead. I know many rail against and denounce it; but you will pardon me if I say they belong to that class who believe medicine a fraud and physicians impostors, who believe in retrogression rather than progression. Modern embalming kills the germs of disease and prevents the spread of contagion entirely. This is a fact easily proved, but which I have neither the time nor ability to discuss.

No more hesitation (nor as much) should be felt in placing the remains of our dear ones in the care of a reputable, capable funeral director, than you have of intrusting their health to a capable, reputable physician, and his instructions and advice should be as carefully followed.

And now permit me to refer to a case in my father's experience where these instructions were not followed. He found the remains in the pantry, on a board which had done service as a cupboard shelf, one end of which was on a shelf and the other on the family pork barrel. The sanitary conditions were not good.

I desire to call your attention to a few reforms in funeral customs sadly needed, it seems to me; the custom, which I am glad to say shows signs of decadence, of opening the casket at the church. I believe it is usually in bad taste, and frequently, from a sanitary standpoint, dangerous. Often the public service has been preceded by a long ride in a close hearse, which, because of its glass sides, is a veritable oven. The heat and the jolting disturb the conditions and cause the release of poisonous gases upon the opening of the casket. If the body has been embalmed this danger does not exist. Besides, it is frequently a great strain upon the tense nerves of the sorrowing relatives, to be made the target of a hundred pairs of eyes passing in file before them.

The practice of removing the hat during the burial service, and that of expecting or requiring relatives to stand unprotected upon the damp ground should both be abandoned. I believe that the mere raising of the hand to the hat is as expressive of respect and sympathy as is the present custom. Burial services should be as short as possible, especially in unpropitious weather. Upon this very point I found an article in one of our papers, which I quote:

CRUELTY OF FUNERALS.

> "Attending the burial of Lady Rosebury, recently, Mr. Gladstone explained that he found it necessary to practice unusual precaution when assisting at a burial service. 'Many an old man,' he said, 'takes his death attending funerals.'
>
> "He might as truly have said that many a young life is sacrificed to the Moloch of conventionality that requires or allows the burial of the dead to be made the occasion of cruel infliction upon the living. In the British islands only men attend interments. This at least is more humane and more rational than the custom in this country of having all the members of a family bereaved share the distress that is inseparable from the deposit of the remains of the beloved dead in the grave. Cemeteries and vaults are necessarily dangerous to health, and the time taken for decorum of interment, and the ceremonies that usually invest it with pious solemnity, expose persons already reduced in vitality by grief to peril of cold and exhaustion at a time when there should be a careful nursing of strength for the new demands that sorrow and responsibility make.
>
> "Any custom intended to do honor to the dead which requires the exposure of the health of the living, is a false and mistaken idea of respect.
>
> "Custom is cruel to the living in its funeral proprieties. It adds nothing to the esteem in which the dead are held, and cannot assuage in the least the pain that is caused by their passing away. Humanity and right reason alike demand that the burials shall be private; that only the few chosen by those directly interested shall attend them, and that the weaker members of a suffering family shall be induced to remain away from a spectacle that is heart-rending, but which they cannot soften by their presence.
>
> "The inhumanity of permitting the weak and the bereaved to suffer the wholly useless torture that must always accompany the echo of clay upon the coffin, will gradually have the effect of making cremation desirable as rapidly as it becomes convenient. It is in every respect the worthier mode of disposing of the poor remnants of flesh that survive dissolution only to be consumed by worms if placed in the ground. It would end many of the dangers that attend burials. It is more cleanly, more sanitary, more soothing, if only the survivors of the dead can bring their imagination so to believe. While interment remains the general mode of disposing of the dead, religion and reason should combine to rob it of cruelties it now imposes upon the living."—*Chicago Herald.*

Rubber Foot Fever.

If a man has a corn, says the *India Rubber World*, it can be removed, but if he is suffering from rubber foot fever, no chiropodist can help him, and the only thing to prescribe is liberal bathing of the feet and removal of the cause. Rubbers should only be worn to keep wet out, and they should be removed the moment the wearer gets indoors. Failure to note this gives a man wet feet in a far worse sense than if he had waded through mud ankle deep. It was the trouble resulting from forcing the perspiration to soak the stockings and keep the feet perpetually damp that drove rubber-soled boots out of the market. Even loose rubbers are a source of danger and the cause of many more serious colds than they avert.

THE ANNALS of HYGIENE. ✣ ✣

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EDITORIAL.

A Secretary of Public Health.

WE wish most earnestly to call the attention of our readers to the petition to Congress for the establishment of "A Department of Public Health," to ask them to read and to carefully consider it. It is a crying outrage, that words cannot properly qualify, that, while the beasts of the field and the leaves of the forest have a representative in the Cabinet of the President of the United States, whose duty it is to conserve their healthy life, the health of man is never a topic of discussion at Cabinet meetings.

We are much too prone, in this country, to criticise our law-makers for their dereliction, as we call it, not realizing that they but reflect ourselves, and that it is their duty to do that, and that only, that their constituents make known will be acceptable to them.

The American Medical Association may memorialize, and medical men and editors may declaim and write from now till doomsday, and their combined efforts will make scarcely a ripple in Congress; but, if some leading Senator and Representative will take charge of this bill in their respective chambers, and if each one of the readers of this journal will write an *earnest* letter—a letter that will show that what it contains is meant—to their Representatives and Senators, the Cabinet of the next President will contain a "Secretary of Public Health," as surely as the President is inaugurated. This journal is read in every State of the Union, and the readers of THE ANNALS have it in their power to secure this vital addition to the Cabinet; will they do it? Let us hope that 20,000 letters will go to Washington from the readers of THE ANNALS during the next two weeks.

King Solomon and His Liver.

ASSUMING, as do some eminent Biblical authorities, that Solomon was the author of the Book of "Ecclesiastes," it may be truly said, with all possible reverence, that a physician can hardly read that book without having the conclusion forced upon him that King Solomon had a liver, and that because he neglected in early life to care for this important organ, the utterances of his old age, as contained in the book in question, are strongly suggestive of the condition, at the time, of his liver. We are not endeavoring to be facetious, we are in sober, scientific earnest when we argue that there is evidence in plenty to substantiate the point we make.

So seemingly contradictory are the sentiments of "Ecclesiastes" that Martin Luther is credited with having said of it, "Difficult as this book is, it is almost more difficult to clear the author of the visionary fancies palmed upon him by his numerous commentators, *than to develop his meaning*."

This man Solomon, whose name, even to-day, is a synonym for all that is wise, gives palpable evidence, in his own words, that he was a man of moods, that, while he may have been possessed of great wisdom, he yet lacked (at least in his old age) stability of conviction; he was as changeable, apparently, in his views of how to attain happiness, as is the weather-vane; and if there be anything more variable (in this latter-day climate of ours) than a weather-vane, it is the mental condition of a man with a disordered liver.

We have already quoted Dr. S. Weir Mitchell's quintessence of wisdom, that "a disordered liver predicts damnation," and we have undisputed medical evidence that a life of self-indulgence will ultimately derange this vital organ.

That Solomon did, in early life, gratify his inclinations for a more or less sensual or carnal life; that he denied himself but few, if any, of the cravings of his appetite, we have his own words to bear witness; that he was very sparing of exercise, we have the usual custom of kings to make us believe.

That the condition of our various organs has a direct and potent influence upon the manifestations of the brain, which we are wont to call "disposition," we cannot, in this day and generation, question.

At one moment we find Solomon saying, "I will go and abound with delights and enjoy good things," which he evidently does, very probably sitting down to a sumptuous repast; for, on awakening the next morning with a furred and coated tongue, a violent headache, a feeling of lassitude and malaise, all due to a disordered condition of his stomach and liver, the result of the last night's feasting, we find him lamenting, "And I saw that this also was vanity." In time, this wise man finds that everything mundane, save the love of God, is vanity; but, as a singular coincidence, while but a single experience or a limited time seems to satisfy his mind that everything else, the acquisition of wealth, of power, etc., etc., is vanity, he is constantly recurring to the effort to find happiness in the gratification of his appetite, just as does the gourmand of to-day.

We would not detract from the reputation for wisdom that has been enjoyed for all these centuries by King Solomon, but we feel quite confident that, with all his acuteness of mental perception, he either failed to grasp the importance of, or, knowing, willfully neglected to take, a sufficient amount of exercise.

That everything worldly is unstable, and that he who centers his affections upon earthly things is the constant victim of disappointment, thoughtful persons of all ages have recognized; but Solomon seems to have been very vacillating in his conviction of this truth, for we find him ever recurring to his repeated conclusion that "there is nothing left for man but to enjoy the fleeting things of this life."

If, instead of living sumptuously, and, as we infer, indolently, King Solomon had nourished his body with good roast beef and beefsteak, with potatoes and hominy and rice, if he had avoided, rather more than he probably did, the use of rich, highly-seasoned and oily foods, and if he had made it a part of his religious creed to walk *five miles every day*, his famous volume might not have been quite so long, but it would have been less flavored with the spirit of vacillation and instability, so characteristic of one whose liver is subject to periods of derangement.

Abandoned Water-wells as Cess-pools.

THE attention of the State Board of Health has been recently called to the fact that, in many towns and villages, it is customary, upon the introduction of a public water-supply, for many of those who connect therewith and have, therefore, no further use for the ancestral water-well, to use this relic of antiquity thereafter as a cess-pool. In the particular instance brought to the notice of our Board, an epidemic of typhoid fever was the result of this practice, and (we are almost ashamed to say) it was in evidence that the principal physician of the town had said that there was no danger in the practice to which we have adverted, and that it had nothing to do with the outbreak of this fever.

Our Board was then informed, by one of its members who resides in the more rural portions of the State, that this practice was very common, and that, strange as it might seem, the physicians of a locality were, not infrequently, prominent among the offenders.

Such alarming carelessness or ignorance seems to us to call loudly for a reminder or for information. Water-wells always are or should be dug down to the water-bearing strata of a locality, and it seems amply clear to the least logical mind that whatever finds its way to the water courses of a locality by deposit in a well, will be most likely to find its way into very many if not all of the wells in the vicinity. If the deposits from a typhoid fever case are thrown into an abandoned water-well, it will be the easiest thing in the world for the germs of the disease to find their way into wells, the water of which is still in use. If *all* the wells are abandoned the danger is reduced, but while some of these wells are still in use, the use of any of them as cess-pools is most reprehensible and should be regarded as criminally wrong if practiced by any one who has read this editorial.

No one wants to drink liquid sewage, and such a beverage would not, certainly, be beneficial to health, yet such will be what you will drink if your neighbor uses his abandoned water-well as a cess-pool, even though he may not deposit the specific germ of typhoid or diphtheria therein. This practice is frightfully wrong and should not be tolerated for an instant.

Consumption and the Seashore.

WE have always inclined to the belief that the popular idea that inland localities should be sought and seashore resorts avoided by the consumptive was erroneous, but we hesitated to so express ourselves until we had some authority with which to reinforce our own ideas on the subject.

Our process of reasoning was a very simple one. We argued that sea-air is about the best general tonic of which we have any knowledge, and we reasoned that such a constant inhalation of tonic atmosphere as a residence at the seashore afforded, could not help but prove beneficial to one whose whole system required "toning up," as is the case with a consumptive, while at the same time we would always look in vain for any valid argument against the seashore for a consumptive.

In truth, the only argument in this direction that we have ever heard advanced was that the atmosphere at the shore was damp; that is to say, that it was heavily charged with moisture. But even if such were the case (and it is not always so), we failed to see how this could prove detrimental to the consumptive.

Dr. Wills (who is the Medical Officer of Health for Southwell, England) seems to have the same views that we have been entertaining, for, in the course of a paper on "Occupation and Health," recently published in the London *Lancet*, we find this gentleman asserting that the death-rate from consumption is not nearly so high in the navy of England as in the army, and attributing this fact to the character of the occupation followed by the members of each service; in fact, he speaks of this form of mortality in the navy as *singularly low*. Dr. Wills goes on to recommend, for consumptives, a residence *as near the sea as possible*. This last recommendation is unequivocally commendatory of the seashore for consumptives, and fully corroborates and indorses the view that we have held. While on this subject, we would wish to dispel another popular error, *i. e.*, that the seashore is a bad locality for chronic rheumatism. Personal experience convinces us that this notion is not borne out by fact; indeed, we have in mind, while writing, the case of a confirmed rheumatic who has traveled the world over, to find more relief this winter by a residence at the seashore, than she has ever been able to find in any other locality.

After "La Grippe."

UNPLEASANT and even serious as may be this disease itself, experience would seem to teach us that it is the after-effects, the remote results thereof, that are to be most dreaded. How many cases of incurable organic disease have had their origin in the "grippe," of course it is impossible to ascertain statistically, but that many persons are invalided or dead whose departure from health dates from an attack of the "grippe," the experience of our readers will, we are sure, bear ample proof.

Why this is so, scientifically speaking, we need not take space to discuss, but, popularly speaking, we would say that it is likely that it is because of the general depressing effect upon the system of the poison of the disease, whereby every part and organ is placed in a condition most favorable for the active development of any latent tendency to organic disease that may have existed and have been previously held in check.

It is a fact that nearly every human being has some organ or part less vigorous, less capable of resisting disease than the rest; with you it may be the heart; with your friend, his lungs; with me, my stomach. So long as all goes well this tendency to derangement remains latent; but when the opportunity is offered disease seizes hold of this particular part and the latent predisposition becomes an active reality.

We do not presume to an intimate acquaintance with the causative agent of "la grippe," but we think that it may be assumed that the disease which has been making such havoc this winter is of the nature of a "blood-poisoning," so to speak, making itself more especially manifest by a derangement of whatever part or organ of the system happens to be the weakest and therefore the least able to resist the onslaught. The great diversity of symptoms found in this complaint would seem to lend some color to this idea.

We can, therefore, understand how this vigorous assault upon a part or organ that is already predisposed to organic disease by its inherent latent tendency, can, by still further weakening it, place it in a condition most favorable for the development and progress of the disease.

Hence does it seem to us most vitally important that one who has had the "grippe" should be unusually solicitous about the restoration of his system to the highest possible measure of health. The subsidence of the active disease should be, not a signal for the resumption of work, but rather a warning for extra care to negative the after-results that are so likely to prove serious.

We would strongly advise all, who can possibly do so, to supplement this disease by a sojourn at the seashore, so that the wonderfully tonic influence of the sea air may have a chance to invigorate and tone up the system.

It is a significant fact, well worthy of most careful attention, that while the "grippe" has prevailed, to a certain extent, during this winter, at Atlantic City, N. J., there has not been, in that seashore resort, one serious or fatal case.

That there is a scientific explanation of this fact, we believe. Experiment has demonstrated that in the atmosphere of mid-ocean disease-germs are absent; the salt air seems inimical to them; such being the case, it seems but reasonable to infer that on the seacoast would be found atmospheric conditions not favorable to the vitality of disease-germs, and this theory would seem to be sustained by the experience, already related, of Atlantic City during the present winter.

The practical point that we would deduce from this reasoning is, that he who would escape the after-effects of the "grippe" would do well to pass a time (short though it must be) at some seashore resort before considering himself restored to health.

The Lesson of Religious Communities.

Many years ago, on our journey from Frascati (near Rome) to Tusculum, where we were to view the site of Cicero's villa, we halted at the entrance to the monastery of the Camaldolese monks, where we had the unique satisfaction of inspecting a body of men who never speak.

An inflexible rule of this order is silence, save among those members who come into contact with the outside world in the intercourse necessary for the maintenance of the community. After we entered the building, we found in a little cell not more than 6 by 8 feet, an old man who had been bedridden for twenty-five years. His great age, and the fact that he had been at one time of the world and worldly, was to be found in the statement that in early life he had been a soldier under the first Napoleon. Stop, for a moment, and realize, if you can, what it means to lie on your back in a bare-walled room, 6 by 8 feet, for twenty-five years. Yet this venerable old man was one of the jolliest, happiest mortals we have ever met; he was truly the greatest philosopher we have ever encountered. Because of his affliction he was allowed to talk, and when we asked him if he was not unhappy and depressed by his condition, his eyes twinkled merrily, and with an unmistakable expression of joy and satisfaction he assured us that he was the happiest of mortals, because he was suffering all the time for God's sake. Call this man a religious enthusiast, if you please; he was most certainly a philosopher. Believing in a future state of happiness, and believing that happiness in the next world was to be secured by suffering in this, this old man was not only willing to suffer, but he actually delighted therein; and as the result of this philosophic frame of mind he had attained great longevity and was living a life that, to him, was a great pleasure, while to the majority of mankind it would have been the very type of misery.

From this extreme case let us transfer our thoughts to the various religious communities that exist throughout the world for one purpose or another and learn therefrom a most salutary lesson. The desire to serve God is the foundation-stone, the *raison d'etre*, so to speak, of these communities, yet if we were to outline a constitution for the organization of a community of sanitarians we could hardly improve upon the regulations of a religious community.

The members of these communities are not fatalists, by any manner of means, yet, believing that their actions are guided and controlled by a higher intelligence than that of humanity, they are ever ready to accept that which happens as for the best, and vain and useless repining for what might have been, but is not, has no place in their breasts. They are not fatalists, for they use their intelligence to the best of their ability, but whatever is the result they believe is for the best. In this one fact alone is found the essence of philosophy and one of the greatest aids to health and long life. Serenity of mind and freedom from worry are the inevitable outcome of this frame of mind, and nothing is more conducive to longevity.

Regularity, that *keystone* of health, is a marked characteristic of religious communities; regular hours for meals; regular hours for sleep; regularity and system in work and recreation; conscientious regularity in everything is pre-eminently characteristic of these men and women. The best and most satisfactory patients we have ever had have been in religious communities, because all of our instructions, even to the most minute detail, would be faithfully and religiously and systematically carried out.

As a rule, it is the average individual who needs the most prodding in regard to the care of his health; the exceptionally able men and women, in all walks of life, have nearly always been appreciative of the value of health and of the science that vouchsafed it, and it seems strange to us, such being the case, that the average man and woman are not more ready to follow the example of these exceptional individuals. Certainly, few men have ever exceeded the ability of old Commodore Vanderbilt to make money, yet it is related that he never found any business sufficiently pressing to keep him at work after two o'clock in the afternoon, the balance of the day being devoted to recreation behind his horses.

But few more eminent divines than the late Cardinal Manning have ever lived, yet care of his health has always been one of his distinguishing characteristics.

Gladstone, Blaine, Bismarck, are all watchful of themselves. The guiding spirit of the great Pennsylvania Railroad finds it wise to spend two days out of every seven away from his office in rest and recreation; it is only the average individual who never attains any prominence in any line who seems, to think it well to work and work, and plod and plod, and never think of his health, laughing at and ridiculing those who are solicitous in reference thereto.

The religious communities to which we have referred have been instituted by men and women of exceptional endowments, and they are governed and controlled by persons of this same character. Would it not then be well for us to pause and reflect upon the lesson held out to us by these communities? While it would not do for all of us to be members of religious communities, yet there are no happier persons on the face of this earth, and this very happiness is unquestionably due to the wisdom of the way in which their lives are ordained.

The time is now ripe for the explosion of the nonsensical idea that it is unmanly or unwomanly, that it is childish, to think about one's health; it is wrong, of course, to be *anxiously* solicitous, but it is, at the same time, the most manly, the most ennobling, the happiest and the wisest possible care a person can have to care for his health. It is, in reality, a badge of superiority, an evidence of culture, a mark of refinement, a sign of higher intelligence, to find one thoughtful for the conservation of his health; and it will be well for us to read the lesson that is laid before us, in this connection, in the lives of the members of religious communities.

Beast to Beast.

THE disgusting and dangerous fondling and kissing of beasts cannot be effectually opposed, perhaps, on the whole; but some persons may be benefited by the repetition of warnings against the numerous infections which that practice is liable to incur; such as hydatids from dogs, diphtheria from cats and pigeons, and from cats the obstinate and loathsome diseases of ringworm and favus. Dr. Fred. J. Leviseur suggests this warning in the *Medical Record*, from having had occasion repeatedly to trace individual cases, as well as small epidemics, of both ringworm and favus, to their source in the endearments of cats. He gives two recent cases, with particulars, of both cat and child. Favus, he states, is a disease peculiar to mice, from which the cats get it.

NOTES AND COMMENTS.

An Epidemic of Tuberculosis.

An epidemic of tuberculosis has broken out in the electrical workshops at Paris. Out of thirty-five workmen thirty-two are consumptive. Twenty-three have become so since entering the workshops.

Coffee-tea and Coffee Berry.

In coffee the leaves are said to contain 1.26 of theine, and the berries only 1.0 per cent., and yet over 110,000,000 men use the berries, and only 2,000,000 the leaves of coffee, although 500,000,000 use the leaves of tea. It is suggested that coffee-tea be used as well as the coffee berry.

A Theological Diagnosis.

My brother (says the Rev. Dr. Talmage), your trouble is not with your heart, it is a gastric disorder or a rebellion of the liver. You need a physician more than you do a clergyman. It is not sin that blots out your hope of heaven, but bile. It not only yellows your eyeball, and furs your tongue, and makes your head ache, but swoops upon your soul in dejections and forebodings.

A New Feature in Milk Supply.

The *N. Y. Medical Times* says that Dr. Brush, of New Jersey, who has for many years paid attention to cattle-breeding and has written a good deal on bovine tuberculosis, has added to his kumyss trade a distinct department for providing milk for infant feeding, from spayed cows, stall-fed and guarded in every way from improper food or contaminated water. The milk of spayed cows is, of course, not affected by the cow coming into "heat."

When is a Sea Voyage Appropriate?

The Sanitarian offers the following advice on the subject: Never send a patient to sea who is compelled to live on a limited diet, unless he can take the requisite food along with him; a ship is the poorest place in the world where to obtain any special article of diet. More ground will be lost by patients under such circumstances, in one week, than can possibly be regained in many months following on shore, even under the most favorable conditions. There cannot be the slightest doubt in the world that a sea voyage may be, and is, beneficial in a great majority of chronic cases, but it should be a voyage chosen for its especial adaptability to the case in question, and the climate, class of steamers, food, etc., should have the careful consideration of the family physician before he sends his patient on a month's voyage by water, for a lack of information on the physician's part may mean no improvement to the patient, and may mean death, whereas positive knowledge would insure improvement.

He Wants His Body Back.

A man in Massachusetts was very hard up some twenty years ago, and was glad to sell his body, to be delivered at death, for ten dollars. Since then, however, he has made a comfortable fortune, and now wants to buy back the deed of his body. The former purchaser is reluctant to sell for any small amount, holding off for a rise, and it is now only a question of how much the man thinks his corpse will be worth.

Prompt Disinfection.

The Paris (France) Municipality has provided three disinfecting ovens where the public can have bedclothes, wearing apparel, etc., disinfected free of charge on applying at any *mairie*, cemetery, or municipal ambulance station. Medical practitioners are supplied with packets of postcards, the dispatch of one of which will cause steps to be at once taken carrying out any required disinfection. A special conveyance hermetically closed and under the care of attendants in distinctive uniform is sent to the house indicated. After disinfection the things are brought back in a different vehicle.

Get Plenty of Sleep.

Sleep is "nature's balmy restorer." The old saw, "six hours for the wise and eight for children and fools," is nonsense. During growth, proper physical development, especially of the brain, demands plenty of sleep; and the more nervous or precocious the child, the more sleep should be the rule. If not, we may expect premature death, or an early and too intellectual growth. Until the fifteenth year is reached, there should be ten hours' sleep; from 15 to 20, nine hours, and after maturity, while each may judge for himself, eight hours is a good rule. Plenty of refreshing sleep will prevent more nervous derangements than medicine will cure.—*Kansas Medical Journal.*

Ruined by Whisky.

One of the best Greek scholars in New York is a guard on the Sixth Avenue Elevated railway, running through that city. Not long ago a famous professor in one of the leading universities published a volume on certain features of the ancient Greek dialects, of interest only to scholars. The guard referred to wrote to a New York newspaper, pointing out several errors made by the professor. He signed himself, "Sixth Avenue Elevated Guard No. —." "For a month," writes a New York correspondent, "I watched the badges of the guards on that road as I made my daily trips. One morning I was rewarded by finding the learned man I sought. 'How does it happen,' I asked, showing him my card, 'that you, a Greek scholar of first rank, should be doing such work as this?'

"He looked at me sadly, and his red face grew more flushed. 'I was the Hellenist of my year at Dublin,' he said. 'My Greek is still what it used to be, but my career has been ruined by whisky.'"

The Tenement Population of New York.

The tenement-house inspection by the New York sanitary police, completed November 1, shows 38,358 tenement and smaller apartment houses, of which 2,391 are rear houses. They contain 276,565 families, embracing 1,225,411 individuals, of whom 160,708 are children under 5 years of age. The larger apartment houses, or family hotels, not included in this enumeration, amount to 140, and contain 2,476 families, embracing 9,793 individuals.

Leper Colony in British Columbia.

An isolation of all lepers found at large in the towns of British Columbia has been ordered by the Dominion Government. An island off the coast, called Darcy's Island, has been set apart and will immediately be prepared for the reception of the leper colony, composed chiefly of Chinese. The authorities have also ordered that an immediate investigation shall be made as to the alleged rapid increase of leprosy in and about Vancouver, and for that purpose Dr. Smith, superintendent of the leper colony of Tracadie, New Brunswick, has been appointed as an expert commissioner to examine and report the true status of leprosy on the Pacific slope of the Dominion.

The Feeble-Minded in Russia.

During the last five years, of 1,852,689 men between the ages of twenty and twenty-five, who presented themselves for military duty in Russia, no less than 3,390 were discharged for mental unsoundness, or 1.8 to every thousand of the entire draft. In the Siberian districts 46,676 men were drafted, of whom 117 were disqualified for the same reason, indicating 2.5 to the thousand. In the three governments of Caucasia 3,327 men were called in, and 20 of their number, or 6 to the thousand, were dismissed. Dr. Ignatieff, of St. Petersburg, taking those figures as a basis, estimates the number of feeble-minded in Russia proper as 9 to every thousand of the entire population, and proportionally greater numbers in Siberia and the Caucasus.

High Buildings.

In most European cities the height of buildings relatively to the width of the street is regulated by law. The enormously high structures recently erected in some cities, especially in New York and in Chicago, are becoming the subject of serious complaint as infringing upon the vested rights of their immediate neighbors. Such buildings should be put up for business purposes and not for residences. They should be absolutely fire-proof and thoroughly strong—not liable to fall by their own weight. Above all, their owners should be compelled to purchase and clear so much ground immediately adjoining as may be required for light and air for themselves and vicinage.—*Tennessee State Board of Health.*

Cleanliness.

History shows that by cleanliness epidemics may be checked, many of them at least; that police regulations, disinfection and isolation are potential factors in stamping out the invasion of epidemic diseases, all this, too, without the least regard to the relative position of "Jupiter and Saturn." This is what should be fastened upon the public. Let all theories of epidemics go. Get clean and remain clean; see that overcrowding is avoided, that streets are cleaned, that back alleys and cellars are dry and clean; bathe regularly, disinfect privy vaults and all questionable places. These matters well attended to and epidemics will at least lose one of their favorite foods—filth.—*Texas Health Journal.*

Worshiping the Bottles.

A story is told in the *Nursing Record* concerning the touching conversion of some Burmese. A zealous well-known lady missionary, in one of her tours, came to a village where cholera was raging. She had a number of bottles of a "noted pain-killer" with her, which she apparently dispensed with great liberality to the stricken villagers, and, leaving a further supply for future use, went on her way. Some months afterward she returned to the same village and was met by the head man with the following gratifying announcement: "Teacher, we have come over to your side; the medicine did us so much good that we have accepted your religion." The highly delighted missionary followed the man to his house, and there, in an inner room, she beheld a stately row of the pain-killer bottles ranged solemnly on a shelf, and before these all present—saving, presumably, the missionary—prostrated themselves in worship. The story ends here, and is not spoiled by any account of the good lady's efforts to disentangle the simple but logical ideas of cause and effect in her new converts' minds.

Does Ether Assist Digestion?

The effect of ether on the digestive processes in healthy subjects has been recently investigated by Dr. Gurieff, who gave thirty drops of sulphuric ether to six healthy persons during dinner, which consisted of about half a pint of soup, four ounces of meat, and six ounces of bread. It was found that the ether had the effect of stimulating the action of the gastric glands, increasing the free hydrochloric acid in the gastric juice, and causing the peristaltic movements of the stomach, together with its power of absorption, to increase, thus on the whole exercising a favorable effect upon the gastric digestion. The same result was obtained when the ether was administered by means of hypodermic injections. It would appear, therefore, that the effects must be ascribed to a general rather than to any merely local action on the mucous membrane of the stomach. Dr. Gurieff is disposed to think that there is a stimulation of the cephalic centers. This view is partly based on the observations of other Russian observers—Bekhtereff and Miloslevski and Pavloff and Shumova-Simanovskaya—on the dependence of the gastric functions upon the central nervous system.—*Lancet.*

New Facts About Sterilized Milk.

Dr. Kellogg, Superintendent of the Battle Creek (Mich.) Sanitarium, for some months has conducted experiments in sterilizing milk. He found boiling milk in well-stopped bottles, placed in a saturated solution of salt, will raise the temperature of the milk to about 230° F., a temperature sufficient to destroy all germs, as proved by the fact that milk thus sterilized will keep for any length of time without spoiling. The scum which rises to the surface of boiled milk is formed of coagulated albumen, or lacto-albumen, which is indigestible and tends to produce inactivity of the bowels. When milk is boiled thus under pressure no surface scum is formed, and it is almost entirely free from the ordinary flavor of 'scalded milk, having the sweet and palatable taste of fresh milk. The bottles may be boiled in an ordinary kettle without breaking, by wrapping them with a cloth so as to prevent the glass from coming in direct contact with the bottom of the kettle. The bottles should be left in this salt solution until cooled.

A Curious Experiment in Food Preservation.

It has long been known that the most perishable kinds of food can be preserved for long periods by freezing. In the arctic regions, where the natural temperature favors such a course, freezing is relied on to preserve meat for months at a time. The introduction of artificial freezing processes has caused freezing to be utilized in our own more southern latitudes with greater or less success for the same object.

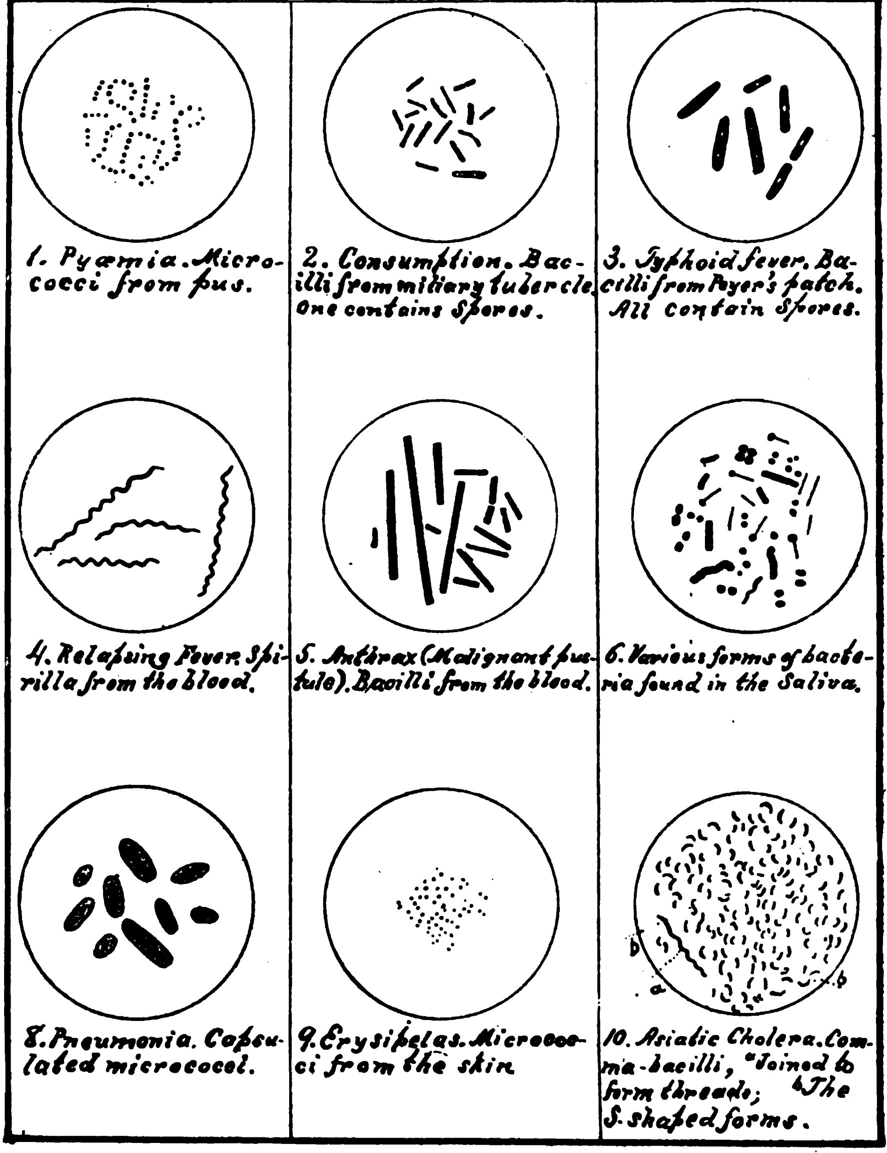
A test of the question of food preservation by the above means was recently brought to a striking conclusion. A few days ago, Mr. Edward R. Bell gave a dinner at his residence in this city. As guests there were present Rev. Morgan Dix, D.D., Rev. Halsey Knapp and some other friends. The primal object of the gathering was to test the palatableness of a turkey which had been killed ten years ago, and which had been kept frozen ever since. Mr. Knapp had been the custodian of the bird during all those years. The turkey was prepared as a part of the dinner.

It was found that the fowl was perfect in shape, and without taint of any sort, but its meat was utterly tasteless and void of all the flavor and juices proper to a well-roasted turkey. The fat and juices had entirely disappeared, leaving only bone and muscular fiber. The prevailing impression as to the inferiority of frozen food products was fully borne out by this interesting experiment. It is known that freezing impairs the flavor of meats, fish and vegetables, and while it arrests decomposition it does not entirely prevent evaporation and desiccation.

Housekeepers who are particular about providing the best beef, fowls and provisions in general for their tables are very apt to avoid the purchase of any products which have been frozen. For reasonable periods food is kept by cold without freezing, and this is virtually the action of our domestic refrigerators. Absolute freezing with preservation through one or two seasons is not to be commended.—*Scientific American.*

The Causes of Disease.

VARIOUS FORMS OF BACTERIA SUPPOSED TO CAUSE DISEASES.
(Copied from Dr. Carl Friedlænder's "Manual of Microscopical Technology.")
In Figures 1 to 9 magnified 1000 diameters.
In Figure 10 magnified 600 diameters.



1. Pyæmia. Micrococci from pus.

2. Consumption. Bacilli from miliary tubercle. One contains Spores.

3. Typhoid fever. Bacilli from Peyer's patch. All contain Spores.

4. Relapsing Fever. Spirilla from the blood.

5. Anthrax (Malignant pustule). Bacilli from the blood.

6. Various forms of bacteria found in the Saliva.

8. Pneumonia. Capsulated micrococci.

9. Erysipelas. Micrococci from the skin

10. Asiatic Cholera. Comma-bacilli, a Joined to form threads; b The S-shaped forms.

Commercial Civilization.

A recent writer very truly and forcibly calls attention to the fact that the boasted civilization of to-day is rather a commercial than an artistic or æsthetic or healthful civilization. He pertinently reminds us that while the most insignificant nations of to-day are far ahead of the greatest of antiquity, so far as transportation, postal and general commercial facilities are concerned, even the greatest nations of this age are far inferior to the least of the older nations so far as their baths, the facilities for cleanliness, the true mark of civilization, are concerned. There is food for wholesome reflection in this over-true observation.

The Self-Purification of Rivers.

The question of the purity of water-supply presented itself to the inhabitants of this city in a very disagreeable way last summer, says the *Medical Record*, for while the contamination was at no time sufficient to cause fears for the actual present, it was suggestive and alarming in the way of showing what it might in time become. But for many other cities and towns whose water-supply is derived from rivers which receive all the sewage of towns above, the subject is one of ever-present interest.

At a meeting of one of the sections of the International Congress of Hygiene and Demography, in London, last August, Dr. Percy Frankland read a paper on the present state of our knowledge concerning the self-purification of rivers, which was of a character to cause considerable uneasiness to dwellers on the banks of such long rivers as the Ohio, flowing past many large cities and receiving all their refuse, yet furnishing the only water-supply to these same towns and others below them. The writer contended that there was no such thing as the "self-purification of a river," and that the evidence brought forward to sustain that theory was fallacious and wholly inadequate to justify the drinking of water from a river which had received sewage contamination at any point nearer its source.

But now we have the opinion of Professor von Pettenkofer to the contrary. He has been examining the water of the Isar River, which flows through the city of Munich, with a population of between 260,000 and 300,000, and receives all its sewage. He made careful analyses of the water at different points, and found that all trace of pollution had entirely disappeared five miles below the city. Some workers in this field have held that the foreign matter was simply deposited as sediment and liable to be mixed with the water of the river at every freshet, but Dr. von Pettenkofer maintains that the real agent at work in purifying a river is the oxygen of the air, which is absorbed by or dissolved in the water.

The results of von Pettenkofer's investigations are in line with the more popular theory, and are more quieting to the minds of dwellers in cities by the rivers ; but it would be safer to follow Dr. Frankland's advice and seek a water-supply from some pure source that can be proved to be above suspicion.

The Disposal of Sewage.

Of all questions bearing on health, no one seems to be so vitally important in this era of crowded urban life, as the disposal of sewage. The various measures recommended, and the numerous "systems" devised to secure this end, attest the vitality of the question and the difficulty of its solution. Out of this chaos of uncertainty we welcome the luminous, logical and in every way correct conclusion of the recent "International Congress of Hygiene," in London, where a resolution was carried, "That in the opinion of this meeting, the best known method of disposing of the sewage of towns is that of purification and utilization on the land."

Placarding for Typhoid Fever.

A large number, if not the majority, of our local boards of health do not placard houses containing cases of typhoid fever, and in many places physicians are not required to report cases of this disease.

Both of these things should be done. While it is probably true that typhoid fever is not a contagious disease, like smallpox and scarlet fever, there is every reason to believe that the disease is spread from person to person by means of infected drinking-water or food. We were lately called upon to investigate the cause of the prevalence of typhoid fever in a small village. In nearly all instances it was found that the first case in a family had drank water from a house where, within a year or less, some of the inmates had had typhoid fever. As the stools of patients were not disinfected, and as the soil was of such character that the wells would be readily polluted, it could be pointed out with great probability how the disease was spread from house to house. In other cases we have investigated, the disease was apparently contracted by drinking from a well at a house where they were having typhoid fever.

Typhoid fever is a preventable disease, perhaps more easily prevented than any of the communicable diseases, and it certainly is the duty of health authorities to enforce all possible measures for its prevention. In order to do this it is absolutely essential to know the location of each case of the disease; and the best way to accomplish this is to require physicians to report all cases which they are called to attend. When a case is reported the board of health should inspect the house and premises of the patient, and if there is reason to suspect that the well is polluted, it should be temporarily and possibly permanently closed. The board should also leave directions for the disinfection of the patient's stools. It is likely that this will be done by the attending physician, who is morally bound to look after this, but it is the *duty* of the board of health, and should not be neglected. It is advisable to put a placard on the house containing the disease, for by so doing needless visiting will probably be stopped and other cases of the disease be prevented.

We, therefore, recommend and urge all local boards of health, if they have not already done so, to adopt a rule requiring physicians to report promptly all cases of typhoid fever under their charge.—*The Monthly Sanitary Record.*

The Care of the Mouth.

In a recently published work Dr. Thomas, a German physician, calls attention to the great value of cleanliness. The best dentifrice, he says, is soap, which dissolves the mucus and removes it from between the teeth more thoroughly than any other substance. After a careful brushing with soap or with the tincture of soap bark (quillava saponaria), some antiseptic should be used. The most efficient antiseptics for this purpose, either of which is capable of destroying the micro-organism in one minute, are thymol, 1 to 25,000, and corrosive sublimate, 1 to 5,000. The following is recommended as a useful and pleasant buccal disinfectant:

Thymol	3 grains.
Benzoic acid	40 grains.
Tincture of eucalyptus	3 drachms.
Essence of peppermint	20 drops.
Alcohol	3 ounces.

Pour enough in a glass of water to render it turbid, and use as a mouth-wash.

Ice Cream.

The readers of this journal are familiar with the fact that we are not very partial to ice cream as the terminal ingredient of a hearty dinner, and we have already given our reasons for this view. But, like nearly everything else in this world, ice cream is a most valuable article when properly used, and one of its proper uses seems to be recommended by Dr. Hertsey, who in the *American Medical News* reports three cases of gastric ulcer in which recovery had followed the use of a diet of ice cream. This novel method of treatment was suggested to him by the experience of a patient, a woman of 35, who had for three months suffered from symptoms of gastric ulcer. She had vomiting of blood, and severe pain, and could retain nothing until by chance she one day took a small quantity of ice cream. She had lost twenty-five pounds in weight. As all ordinary methods of dieting had failed, and digested food administered by the rectum was rejected, the patient at her own desire was allowed ice cream, and told to take as much of it as she could. Her severe symptoms at once began to subside, and at the end of two months, during which from one to three quarts of ice cream were taken daily, she had gained twenty-four pounds in weight. Solid nourishment was gradually added to her diet, and she made a complete recovery. Dr. Hertsey had a similar experience with two other patients, in one of whom there were symptoms of perforation and local peritonitis, and he is naturally inclined to think highly of the mode of treatment and to recommend its use in similar cases. He believes that the ice cream in those cases is beneficial because of the local anæsthetic action of the cold, permitting digestion to go on without pain, while at the same time sufficient material for digestion and nourishment is supplied in the cream. But he insists that every care must be taken to insure the absolute purity and freshness of the ice cream, and for this purpose he recommends that only that which is made at home should be used n such cases.

Brain Rest.

Sir James Crichton Brown, in his course of lectures recently delivered upon the subject of "brain rest," said that ordinary sleep grows deeper for the first hour and a half, and then steadily diminishes until the slumberer awakes. Sir James pleaded for eight hours for actively working brains, though ascetic notions have led many people to shorten the time, with the result that in certain cases it has been proved that the amount of sleep may be considerably reduced without injury. Literary men were apt to starve the brain in the matter of sleep, but some, nevertheless, had got on pretty well in spite of insomnia. Carlyle and Rossetti furnished instances. The lecturer quoted a letter from his friend, Dr. Tyndall, who said: "For four weeks I have never had a single second of sleep, and during these nights I walked thousands of miles round my room to no purpose. What astonishes me above all," he adds, "is, notwithstanding my night's weariness, my brain-power does not appear to be sensibly impaired. After two or three hours' sleep I feel my brain as strong and clear as it ever was at any period of my life." It is, in Sir J. Crichton Brown's opinion, impossible to doubt that nutrition and repair must have gone on in the brain during periods of sleeplessness. The brain, in short, must, as he expresses it, "have learnt the trick of the heart and gone to sleep during the beats, or it must have slept in centers which were not active at the same time." —*N. Y. Med. Times.*

Artificial Teeth from a Hygienic Point of View.

It is common experience among dentists that a very large majority of artificial dentures worn are discolored and by no means devoid of unpleasant odor. This lack of cleanliness, which arises sometimes from neglect, but often from want of instruction on the part of the dentist as to the necessary *modus operandi*, is a fruitful cause of inflammatory conditions. Debris of food mixed with saliva and mucus accumulating on a plate rapidly undergo decomposition, with the result of irritating the mucous membrane and producing a general inflammation of the oral cavity. The oral secretions become altered and vitiated, so as to cause dyspepsia, and caries of the remaining natural teeth is set up, which proceeds with great rapidity, especially in the "clasp" dentures, not from the friction, but because the inside of the clasps most generally escapes the brush. The materials used in the construction of artificial dentures differ widely in their effect upon the tissues with which they come in contact. A larger number of cases of inflammation of the oral tissues occur where vulcanite is used as a basis than with gold or other metals, and so prevalent is this inflammation in the case of vulcanite that it has received the distinctive appellation of "rubber sore-mouth." Several reasons have been assigned for the effects produced by vulcanite. Nearly all this material is colored with mercuric sulphide (vermilion), which ingredient has been accused of being the cause of the trouble; but an exhaustive investigation did not substantiate this view, one particular point being that "rubber sore-mouth" often occurred where black rubber was used, which contains no vermilion. The porosity of vulcanite, especially when not sufficiently vulcanized, renders it liable to retain deleterious material if not kept scrupulously clean.—*Lancet.*

A Department of Public Health.

Senator Sherman introduced (December 10) a bill to establish a Department of Public Health under the charge of a medical officer to be appointed from civil life by the President. This department shall obtain from consular officers at foreign ports all information available in regard to the sanitary conditions of such ports and places, and also all information accessible from State and municipal authorities of the sanitary condition of places within the United States. All information gathered to be embodied in the form of a bulletin and transmitted weekly to the marine hospital service, collectors of customs and to State and municipal health officers. The department also shall, as far as it may be able, procure and tabulate statistics relating to marriages, births, deaths, the existence of epidemic diseases, and all information relating to climatic and other conditions affecting public health. The department will co-operate with State Boards of Health, the Signal Service, the medical department in army and other branches of the Government, and utilize the researches so as to make the department a repository of public sanitary comfort. All rules governing the service are to be framed by the medical officer in charge, and are to serve for the instruction of consular officers abroad, and for masters of sailing vessels bound for the United States from foreign ports.—*Ex.*

Fetid Feet.

The cause of this unpleasant ailment is to be found in the unnatural custom of wearing shoes. Nature contemplated a shoeless animal when she made man, and she so arranged the epithelium on the soles of his feet as to provide for a reproduction of the layers worn off in walking. So well suited to man's necessities was this arrangement, that Parkes, after discussing the merits of various foot-gear, concludes that the best shoe for soldiers is no shoe at all. But man had to improve on nature, and the way he has done it is by encasing the foot in an impermeable casing of tanned leather. This prevents the removal of the epithelium from the sole, and also prevents the escape of perspiration, which, keeping the dead epithelium moist, infallibly renders it odorous.

The reason why washing does not relieve this is, that soap and water alone are insufficient to remove the epithelium. No amount of rubbing will do this, and it is doubtful if anything short of a vigorously wielded scrubbing-brush will do so. But the Greeks had something better even than this. Some of our readers will remember the description given by Xenophon of the games instituted by Cyrus, before his march to the field of Cunaxa, and that among the prizes given to the victors were "golden flesh-scrapers." Not even a brush equals in efficiency the scraping with some metallic instrument, like a dull paper-cutter.

We would recommend, therefore, for fetid feet, that the sufferer should soak the feet in hot water, and scrape them well, every night, until the nuisance is abated; and to keep this up weekly thereafter, with morning ablutions of cold water with no soap, but followed by vigorous rubbing with a coarse towel. This is better than all the salicylated powders or ointment.—*Times and Register.*

Ventilation of Railway Cars.

The general public is becoming aroused to the necessity of improvement in this respect. Dr. J. M. Keating, in the December *Climatologist*, has a terse paragraph expressing the views of a multitude of travelers: "There is no doubt whatever that we all appreciate fully the comforts of modern travel and are grateful for them; nevertheless, for the invalid there is much that is trying, most fatiguing. The subject of proper ventilation and heating of cars, and especially sleeping cars, does not seem to have received the attention it deserves, and certainly, from a standpoint of hygiene, the Pullman car and other *sleepers* are as far behind the times as the "prairie schooner" is to the "vestibuled train." It is to be hoped that the Association of Railway Surgeons, or some influential individual, will take this matter in hand and give us an anti-microbic sleeper, temperately heated and well ventilated; get rid of the heavy hangings and stuffings, which certainly are germ carriers. For the sea-voyagers much more has been done; the present new ships are models of hygienic perfection.

How a Druggist Should Cleanse His Hands.

On this subject a writer in the *Pharmaceutische Centralhalle* advises as follows: When the hands have been stained by strong alkaline solutions, they should be washed in some dilute acid—citric, oxalic or acetic (1 to 100 of water). If soap without water is then immediately applied, fatty acids are deposited in the skin, which thus becomes liable to crack. The effects of lime solutions and also of strong ammonia may be prevented in the same way. After using mineral acids the hands should be washed with water and rubbed while wet with a piece of soap. If the acid was very strong or has affected a large surface, they should be bathed, after washing, in a weak solution of soda (1 to 100). Strong sulphuric acid is first to be washed off, as far as possible, with plenty of water, after which soap should be employed as above directed. If water is used abundantly there is no danger of too much heat being evolved. When the acid has caused severe burns the affected parts may be covered with a paste composed of magnesia, carbonate of magnesium, or bicarbonate of sodium, with a little water. Nitric acid is removed by the same process. Burns by this acid, especially when treated with alkaline agents, are apt to leave behind a yellowness of the affected integument. Nitric acid destroys the epidermis so quickly that it can hardly ever be restored to a normal condition, and the same is the case with the fumes, also with those of nitro-muriatic acid, bromine and chlorine. Iodine stains should be treated with a solution of thiosulphate (1 to 10 of water). When the hands have been exposed for a long time to the action of carbolic acid, wash them first with alcohol—which may be used several times over for this purpose—and then with soap; after which, without being dried, they may be rubbed with lanolin. After working with sublimate solutions it is best to bathe the hands for some time in a solution of common salt (1 to 50 of water), followed by soap and lanolin.

Cremation.

Whatever may be said about cremation from a sentimental or religious point of view, there can be little doubt that the weight of sanitary authority is in its favor. This fact was strikingly illustrated at the late "International Congress of Hygiene," in London, when, after a spirited debate, a resolution in favor of cremation, especially in cases of contagious diseases, was carried by the crowded assemblage, with only four dissenting votes.

Precautions Against Cholera.

As a matter of historical and, possibly, at some future time, of practical interest, it will be not unprofitable to note (from *The Lancet*) what Egypt did to guard herself against any possible outbreak of cholera during the summer of 1891. The disease broke out in Mecca in July, and was also known to be lurking in Syria, so that Egypt seemed menaced from two points. During the months of August and September, 11,950 returning pilgrims were received at the quarantine station of El Tor; themselves and their clothing were thoroughly washed and disinfected, and though 121 deaths occurred among them, only six were victims to cholera. It is most satisfactory to note that no cholera appeared in the track of these pilgrims, though the disease broke out again in Syria shortly after their return there. Some 450 pilgrims, mostly camel drivers, returned to Egypt by the land route, and, as usual, arrived in good health. In Egypt itself strict measures were taken to enforce an amount of cleanliness, which is unhappily habitually absent from this country. Responsible committees were formed in all the chief towns to inspect nuisances and insist upon sanitary reforms. All worked with a will, except the representatives of the Wakfs, the Ecclesiastical Department, who do their utmost to obstruct real progress. The following list will give an idea of what was done during the summer months, and it is to be hoped that the Government may in the future be induced to carry out a similar "spring cleaning" every year. Some 13,000 Cairo huts were cleansed and whitewashed, besides an equal number in the provincial towns, while more than 3,000 of the worst of them were destroyed; 2,000 more were condemned, but have not yet been demolished; 1,700 small inns, half of which were in Alexandria, have been cleansed and whitewashed, and 700 others were condemned and closed; 220 of the public baths were shut up, and 710 others were well cleaned. Nearly 4,000 mosques were forced to have their latrines cleansed and whitewashed, but there remained 1,800, mostly in the country towns, where sufficient sanitation was not carried out; 629 drains leading directly into drinking water canals were peremptorily closed, but the Commission reported that there remained 113 drains in Behera province to be so treated, and 79 more in Guergeh province; 7,514 of the low-class stables and shops were treated with whitewash, and 642 public kitchens were overhauled, while in Cairo alone 1,719 tripe shops were compulsorily made clean. Rags and bone warehouses were banished to the outskirts of towns; 14,643 private houses of the lower classes were whitewashed in Cairo alone, besides 13,540 of the small shops and coffee houses.

The Influence of Weather on Disease.

We may regard it as certain that an apparent connection between infectious diseases and atmospheric conditions had suggested itself to the medical mind long before Sydenham attributed to the atmosphere an "epidemic constitution." The influence of weather would be measured by its effect in providing an environment suitable to germ development. Thus, moist weather, whether bleak or warm, would be found conducive to the spread of contagia, and so it is. This fact has often been attested by the extension of cholera, diarrhœa, and the exanthemata. A warm and dry day, on the contrary, tends to check morbid action of an infectious kind. This fact is susceptible of more than one explanation. We may, on the one hand, regard it as a consequence of the absence of that germ-fostering condition—humidity; on the other, we cannot fail to be reminded that dry warmth and sunshine give the signal for an exodus from many crowded homes, for their freer ventilation, and consequently for diminution in the intensity of contagia. The exact value of weather changes in regard to this class of diseases, however, still is and must for some time remain *sub judice*. As for the ailments more usually associated with these changes—those, for example, more commonly known as inflammatory—the connection is here much more evident, and also in all likelihood more direct. The association of pneumonia, bronchitis, asthma and rheumatism with bleak and wet weather is too invariable to permit of our doubting its reality, apart from any suggestion of septic agency.—*Lancet.*

The Doctor in Modern Society.

This is the heading of an editorial in the *New York Medical Record*. The physician of to-day exercises more or less influence upon all the affairs of life. In a sense he is the supreme educator; for juries refuse to convict; philosophers pause before considering abnormities of will, memory, or personality; the historian waits in his description of prophet and sibyl until the medical man has spoken. It is impossible to build a house properly, bring up children aright, discipline an army, and live with structure healthily developed and function of every kind unimpeded—which is the nearest approach to happiness for anyone—without first consulting the hygienist. The doctor is everywhere—in society, in politics, the fine arts, religion and philosophy. In a recent paper Maurice de Fleury thinks the medical man has just cause to be proud of his present position. Alphonse Daudet calls him the last priest and supreme belief. Painters and sculptors owe much to medical science. . . . The debt of novelists is even greater. The representatives of literature owe as much to Claude Bernard as to Balzac. This century is one of science, and among *savants* medicine occupies the first rank, because it is of wider scope and more human than any other branch. . . Be the realization as it may, it is a significant fact that the practical needs of humanity are best known to the physician, who, in spite of himself, thus becomes a functionary of high order, invested in great degree with the welfare and happiness of the human race.

Mortality According to Occupation.

At the recent Congress of Hygiene and Demography, Mr. Ogle presented statistics as to the comparative mortality among those between twenty-five and sixty-five years old engaged in the various occupations in England. The death-rate among clergymen being the least, this was taken as a standard of comparison. The following table presents the comparative mortality:

Clergymen	100
Gardeners	108
Farmers	114
Husbandmen	126
Papermakers	129
Grocers	139
Fishermen	143
Cabinetmakers	148
Lawyers	152
Brushmakers	152
Mechanics	155
Tradesmen	158
Woolen drapers	159
Shoemakers	166
Commercial travelers	171
Bakers	172
Millers	172
Upholsterers	173
Masons	174
Smiths	175
Laborers	185
Wool-workers	186
Armorers	186
Tailors	189
Hatters	192
Printers	193
Cotton-workers	196
Clerks	199
Physicians	202
Quarrymen	202
Bookbinders	210
Butchers	211
Glassmakers	214
Plumbers, painters, etc.	216
Cutlers	229
Brewers	245
Omnibus-drivers	267
Wine-merchants	274
Bass-singers	300
Potters	314
Miners	331
Hotel-waiters	397

—*Sanitary News.*

An Improved Window Frame.

An improved construction of the sash slideways of window frames designed to effectually prevent draughts and the rattling of the sashes, which, when closed, will be firmly wedged in place. It has been patented by Mr August Schmidt, of No. 1768 Amsterdam Avenue, New York City. The frame is of the ordinary pattern except in the slideways of the upper and the lower sash, of which the parting rail, instead of extending vertically from top to bottom of the frame, is placed diagonally, so that the upper portion of the slideway for the upper sash is narrower than the top portion of the slideway of the lower sash, while at the bottom the slideway of the lower sash is narrower, and that of the upper sash wider. The width of the slideway of each sash at the top and bottom approaches as nearly as possible that of the thickness of the top and bottom rails of the respective sashes. The parting rail in the slideways, as shown in the accompanying picture, is placed in a slightly diagonal position so that when the sashes are closed they will be firmly wedged in position to exclude air and prevent rattling, while in the upper portion of the slideway of the lower sash and the lower portion of the slideway of the upper sash, a spring is placed in a recess in the parting rail, by means of which, when either sash is pushed to the wider portion of its slideway, it will be held at any position in which it may be left. The obvious convenience and the extreme simplicity of the device will be readily apparent. As the taper of the sash slideways is very gradual, the sashes are designed to be freely moved without binding, so that they can be easily raised and lowered, while the springs enable the sashes to be held in any desired position in the wider portions of the slideways without exerting tension at all times on the sash cords.

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COMMUNICATIONS.

Subterranean Paris.

THE WATER SUPPLY AND SEWERAGE OF THE FRENCH CAPITAL.

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[SPECIALLY PREPARED FOR THE ANNALS OF HYGIENE.]

(Continued from page 100.)

THE SEWERS.

THE quickest possible evacuation of all soiled and noxious waters constitutes, as I have said already, the second condition essential to the hygiene of any human community.*

This evacuation operates by the medium of a system of conduits, or *sewers*, which are in communication with each other; on the one part with the street, to receive all rain-water more or less impregnated with impurities, and on the other part with private houses, to discharge the house-waste and the water from industrial establishments, and also the sewage-water with or without the matters from cesspools.

Thus there is a set of sewers arranged to receive the rain-water and water filled with house-waste, but not such carrying the sewage proper.

Then, following the principle of the *separate system*, there are sewers receiving the water from houses and that carrying sewage, but not taking in rain-water.

Finally, and that shows again their tendency to generalize, there are those receiving all the flows together, *i. e.*, all the sewage.

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* I purposely lay aside the question of the Parisian subsoil, for, as with most cities situated on the banks of a river, the ground underlying the city is formed of alluvial soil, more or less permeable, and subjected to infiltrations coming from various water-courses and their subterranean sources, which traverse the soil.

At the time of high water, when the Seine overflows, the cellars of houses are often inundated. For several years past intelligent drainage-works have been executed to prevent the humidity resulting therefrom from penetrating into the soil.

In Paris, the subterranean water-stratum is formed of four secondary strata corresponding with the Seine, the Bierre and the canal of Saint Martin, which all converge toward the city about 28 metres below the level of the sea—*i. e.*, 6 or 7 metres deep, as the altitude of the surface at this point amounts to about 34 metres in the average.

To Belfrand, in 1876, Paris is indebted for the most complete and perfect system that it actually possesses. And, to show the progress it represents, I will say a few words concerning the state of affairs as it existed before that date.

Under Louis XIII (1610–1643), the little creek of Bierre and the river Ménilmontaut, which were flowing uncovered, used to receive all water from the sewers and from the industrial establishments of the city and carried them into the Seine.

The first trace of a uniform system becomes apparent in 1663, when it consisted of six small troughs, isolated and covered, which discharged their contents into the Ménilmontaut. That which passed to the foot of the canals of Chaumont and Montmartre traversed the plain of Monceau and emptied into the Seine at Chaillot. This river was covered in 1780; a basin was added to it, and it became an inclosed sewer of 2 metres width; it received all the secondary branches from the right bank of the river (Seine).

The sewer of the Rue de Rivoli, which was the first of all completely finished, dates from 1830.

In Belfrand's project the total figure of the capacity of the sewers to be constructed rose to 1,040,000 metres; to-day the part constructed has a length of more than 900,000 metres.* Three collectors flow into the basin, which they supply:

(1) That of Asnières, which discharges into the Seine and has a fall all the way from Asnières.

(2) That of the left bank, taking in a part of the Bierre creek, which it absorbs, passes along the bank, and enters the Seine at Alma by way of a syphoon, which, of one metre diameter, penetrates to the river-bed forming its bottom. This collector, under the name of Marceau, not far from its discharge, joins later the Asnières collector.

(3) The Department collector, beginning at the foot of the north hills outside of Paris, which it enters by the La Chapelle entrance, empties on the right bank at Saint Denis into the Seine.

These three collectors receive all secondary sewers which, according to the categories to which they belong, have a section of from 9 m. 22 to 1 m. 63.

The whole system is completed by about 380,000 metres of special branches, which bring the subterranean canalization, as a whole, to over 1,200 kilometres. "Its length," says J. Rochard, "surpasses the greatest diameter of France."

In accordance with the principles established by the genius of modern civil engineering, the interior shape of a sewer should be such that the rapidity of its discharge is always as great as possible, whatever may be the variations of its outlets. As regards the rest, the inner side-walls should be of a nature best able to resist the lateral pressure of the ground, and also the vertical pressure of the embankment and of the fixed and movable charges which it has to support.

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* This makes about 10 kilometre sewers each year.

Under these conditions the rounded shape is the one best suited, although there are also ovoid and circular shapes, which have been adopted for the sections of modern sewers. In Paris, Belfrand has given the preference to the ovoid form, with thick upper extremity, as these suit better for feeble outlets.

The sewers of Paris receive, therefore, all rain and household water, with all that they take away from the public streets, and which carries with it the fluids from the urinals, the detritus of every kind, which is thrown into them by persons living on the river-banks, and, finally, the discharges from the cesspools of a certain number of houses and of public institutions. In their interior they also, besides, contain the conduits for the distribution of water, all the telegraph and telephone wires, and the pneumatic tubes in which the telegraph-cards circulate.

In a study found among the publications of the French Society of Hygiene, Mr. Ch. Ferrier furnishes the following useful information: *

"Neither the canalization of Brussels nor that of London can compare with that of Paris, where the workingmen can pass, all over, through them. Man himself does not do the cleaning, but he must oversee and accelerate it.

"The canals in Paris have a height which is never less than 1 m. 80 in the public sewers, 1 m. 50 in the special branches, and of a width of about 1 metre, with an ovoidal profile at their lower portions, where the discharges take place. They are all built of bricks (the surface being like a mill-stone, thus is the whole cemented with mortar) and have an average thickness of 0 m. 30.

"The kind of sewer most generally used in Paris also is the ovoidal shape, of a width varying from 2 m. 30 to 1 m. 30.

"The collector—or emptier—sewer (the grandest work of its kind that exists in the world, as Mr. Haussman said with pride), which is situated at Asnières, has almost monumental proportions, 4 m. 40 from the top to the bottom of the cunette, and 5 m. 60 from one inner wall to the other. The thickness of its branches (mains) amounts to 1 m. 95; in its subterranean portion it is only from 0 m. 40 to 0 m. 65. To obtain the water from the quarters on the left bank, a double shaft of wrought iron of 200 metres length, 0 m. 02 thickness and 1 metre diameter, is carried into the Seine.

"As far as the width permits, the inferior part of the collectors presents one or two covered trenches, at the bottom of which the water is collected in a cunette with rounded base. In the "emptier" the cunette becomes a gutter of 3 m. 50 width and 1 m. 35 depth, with two trenches of 0 m. 90 width.

"All the galleries communicate with the streets by the mouths (openings) of discharge (outlets), which are always covered; there are a great many of these, and they have a great fall, and are placed from 50 to 50 metres apart, and are provided with straight iron ladders for the convenience of the egouttiers (sewer-workingmen).

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* Etude sur les égouts de Londres, de Bruxelles, et de Paris, par Charles Ferrier, architecte, membre de la Société.

"All parts of the canalization covered with a layer of cement of 0 m. 02 average thickness, form bright and shiny walls with their rounded profiles, they reflect the light, are good carriers of sound, and do not offer the least resistance to the flow of liquids.*

"This beautiful canalization shows its best at its end. The cleaning is done there without fatigue and without loss of time in the great sewers by a boat-like sluice, maintained by two movable guides, and in the small sewers by a water-draft (flue) set in motion by human hands, but only as long as it cannot be done otherwise.

"Through the galleries of medium type the cleaning is done by aid of a wagon-sluice, which rolls on two fixed iron rails at the upper stoppages of the trenches (banquettes).

"This boat and this wagon are carriers, having in front a movable sluice of the form of the cunette, and can be raised or lowered. In the former position, as soon as the water is allowed to pass in sufficient quantity, the impurities accumulate at the bottom of the wagon-sluice and thus make a dam, which, by the obstacle it offers, in an irresistible manner augments the force of the current, and this sweeps along the impurities. In consequence of the same causes there acting, the same results are reproduced in the boat-sluice.

"The cleaning-process by the syphoon, which frees the Seine of its sewer-matters on the left bank, operates in a different but not less ingenious way.

"Here we have to do with a thick tube completely cylindrical and of one metre diameter. All that is necessary is to let a perfectly round light ball of pine wood of 0 m. 95 diameter pass through. By virtue of its lightness, it is always supported in this flue at the upper end of the syphoon, and does not leave more than 0m. 05 space at its lower part for the passage of the water and the solid matter the latter contains. The moment this solid matter causes an obstruction in this narrow passage, a powerful column of water at once accumulates behind the ball, so that this is pushed forward to the end with great force and in the least possible time, thus cleaning out the flue most effectually.

"The canalization of Paris, as a whole, is, therefore, irreproachable, and the only thing that could be demanded more of this service is a greater utilization of the fecal matter evacuated. That is the opinion of almost all competent authorities.

"The principal objection made at other times disappears, for it is believed that means and ways have been found to clear the Seine of the solid matter of the sewage and to transform it into matter of great value."

I will not discuss the question of the cost of maintenance of the sewers, for in Paris everything is combined (the necessary grade or fall, caliber, volume of water, basins for settling) to obtain an uninterrupted automatic cleaning.*

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*"In the Asnières sewer," said Mr. Nulle, one of the city engineers, "where one may as easily move about upon the trenches as on the steps of a staircase, where one has light as in a manufacturing establishment, where one is notified by signals at 3000 metres distance (by the cornet) when a workingman cleans the canal by simply maneuvering a sluice and by letting his boat go to the bottom of the water. That is a work which is viewed with surprise by all persons, who either admire or study its function."—Verbatim : to whom the ædilship (l'édilité) is a function or a study !

The ventilation is about just as satisfactory, and it is only during the hot season that any disagreeable odors are exhaled, and only when the temperature and barometrical pressure suddenly undergo changes, and the air current in the sewers is forced toward the outlet into the street.

In the opinion of Bouchardet, the eminent French hygienist, these odors are more disagreeable than noxious to health, as they are due to light hydrogen gases, and because the microbes of infectious diseases are heavier and rest in the sewer.

The analysis of the sewer air, made by Marie Davy, showed it not to differ sensibly from normal air. It develops a little less oxygen and ozone and a little more carbonic acid, and it is also often impregnated with deleterious gases, which are set free from the water and from the organic matters in process of decomposition and carried along with the sewage.

According to the researches of Miguel, the air in the great collector of Rivoli Street is poor in micro-organisms, because it always remains more or less saturated with humidity.

"The water of the sewers," writes Professor Cornil in a report to the Senate, contains a considerable quantity of microbes of different species, which it is much easier to count than to determine their species, their genera and their properties. Most of them are inoffensive, some are pathogenic. Their number oscillates around 80,000 per centimetre.

"Whenever a sewer is well ventilated the aero-microbes predominate. There then develops a veritable combustion under the influence of organisms, which transport the oxygen to the organic matters to burn them.

"If, however, the amount of air is not sufficient, if the decomposing organic matters have absorbed all oxygen from the circulating water, or if this water completely fills the conduits, putrid fermentation sets in. The æro-microbes now become active and give rise to various fermentations, the main results of which are especially ammonia, due to the organic matters, and sulphur products, due to the reduction of sulphates."

In a general way the quantity of sewer-water of a large city is less than the quantity of water which it receives for the private and public service. In Paris the medium volume which the collectors daily carry is 250,000 to 260,000 c.m., representing about 70 per cent. of the whole water of the city, a figure which corresponds with about 12 litres daily per caput (head).

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* Mr. Lauth, in a report to the Municipal Council (1877), has classified the various substances held in suspension by the sewer-water of the capital in the following manner:

1. *Floating bodies* (detritus of any kind—grass, vegetables, waste from tanneries, straw) which follow the current of water and cannot be arrested except by filtration.
2. *Muds and very light dirts*, which are held in suspension in such water while it is agitated or moving along at a medium rate of speed, and which are slowly deposited as soon as the water is absolutely immovable.
3. *Small pieces of glass*, which at once fall to the bottom in immovable water, but which are carried along if the water has a velocity of 0.30 per second.
4. *Finally, glass and pebblestones*, which, to be kept moving, necessitate a velocity of 0 m. 36 to 0 m. 60 per second.

These heavy particles in the long run constitute veritable nuisances.

Wurtz, in his chemical studies on the sewer-waters of Paris, describes it as muddy and grayish in the collectors, and almost black in the small conduits as soon as it becomes stagnant. The water is then at once covered with abundant foam, traversed by large bubbles of gas and formed of various organic matters, among which grass and straw-debris are the most frequent. This foam is especially rich in fats, and with ether about ten per cent. of this vehicle can be obtained.

The density of the sewer-water necessarily varies much; one may say, from 1,005 to 1,002.

A chemical analysis of this sewer-water at different points along the whole course of the collectors has been made in the laboratories of several authorities.

In the following we publish its composition at the moment of its emptying into the Seine, as determined by the l'ecole des ponts and chaussées (school of bridges and roads):

	PER CUBIC METRE.		
Azote	45	723 pct.	2908 pct.
Other combustible matters, or such as are volatile (organic, in large quantity)	678		
Phosphoric acid	19	2185 pct.	
Potash	37		
Calcium	401		
Sodium	85		
Magnesium	22		
Insoluble residue in the acids (especially silica)	728		
Various mineral matters	893		

[TO BE CONTINUED.]

What Should Boards of Health do to Prevent Consumption?

BY EDWIN LE FEVRE, M.D.,

Health Officer of Sidney, Ohio.

CONSUMPTION is the arch enemy of mankind. It has come down to us from the days of antiquity, and has spread into every part of the globe where the conditions are such as to permit of its existence. There is scarcely a community in the civilized world where it is not constantly to be found, and in nearly all our mortality tables it leads with the greatest number of victims. It is said that three thousand people die every day in Europe of consumption. I have seen no reliable statistics in regard to the United States, but it is probable that the number who die annually from this cause is not short of one hundred thousand. Dr. B. W. Richardson says that one-tenth of all the inhabitants within the temperate zone die of consumption, and this is regarded as a very conservative estimate.

What an army, with pallid faces and emaciated forms, marching to the spirit land!

The bacillus tuberculosis is a very innocent-looking organism, as we see it through our microscopes, but what a factor for suffering and sorrow it has been in the world's history?

But we are here to discuss the practical side of this question. What can we do to circumvent this universal scourge and prevent its inroads on humanity? To be more specific: What can boards of health do to prevent consumption? Practically, in this State, they are doing little or nothing; but I believe they can and should do something in this direction.

I shall not waste any time in citing evidence to prove that consumption is a communicable disease, as that fact now seems to be almost universally adopted. The medical profession and leading scientists of the world, who have made a study of this question, now believe that consumption, and by consumption we mean that form of disease characterized by the formation of tubercle and the presence of the specific germ, is, under favoring conditions, communicable from man to man, and between man and animals. The title of my paper presupposes that consumption is a contagious disease, and therefore a preventable one. What can we do, therefore, as boards of health and health officers to prevent its spread? It is now well demonstrated that the chief source of infection is the dried sputa of tuberculous patients, and the knowledge of this fact must largely govern us in our efforts to stamp out the disease. If all the expectoration of consumptives was burned or disinfected before it becomes dry, the chief source of infection would be eliminated. Unfortunately, in the great majority of instances, this is not done, and boards of health are powerless to enforce such hygienic measures as are necessary to protect the healthy.

Public sentiment and humanitarian considerations do not as yet admit of the complete isolation of consumptives. Hence our efforts in this direction must be largely of an advisory and educational nature. We should lose no opportunity to educate the people as to the nature of tuberculosis and the methods of its dissemination. Every person should know that a consumptive patient is a dangerous factor to his family and the community unless the proper precautions are used.

When such patients are confined to the house, they should be taught to expectorate into pasteboard or wooden cups, which, together with their contents, should be burned daily. When they are able to go about, they should be instructed never to expectorate on the street, or floor of any building, but upon cloths, which should be burned as soon as possible; or, if handkerchiefs are used, these should, at the earliest moment, be soaked in a bichloride solution and then boiled and washed. The point to be always kept in view is, that the sputa should never be allowed to become dry, and thereby disseminate the germ through the atmosphere. So important is this that a writer on this subject has summed up the prevention of consumption in these five words: "Keep water in the spittoon."

A careful investigator is authority for the statement that a tuberculous patient expectorates from two hundred and fifty thousand to four billion bacilli in twenty-four hours. It may, therefore, be seen what a dangerous factor he may be to those about him, if no effort be made to render his sputa innocuous. The bowels are freqently the seat of tubercular disease, often made so no doubt by swallowing the sputum; and unless all discharges therefrom are thoroughly disinfected, they may become a source of infection.

All rooms occupied by consumptives should, from time to time, be carefully cleaned and disinfected, and this should always be done after they are vacated, and before they are again occupied by other individuals. I wish to quote the following excellent advice bearing on this point from a circular issued by the Pennsylvania State Board of Health: "The duster, and especially that potent distributor of germs, the feather-duster, should never be used in the room habitually occupied by a consumptive. The floor, wood-work and furniture should be wiped with a damp cloth. The patient's clothing should be kept by itself and thoroughly boiled when washed. It need hardly be said that the room should be ventilated as thoroughly as is consistent with the maintenance of a proper temperature." I will also add, in this connection, that persons should be warned against sleeping in a room occupied by a consumptive, and children and persons predisposed to the disease should be kept away from them as much as possible.

Boards of health should protest against the admission of consumptives, either as teachers or pupils, in our public schools. The school-room is no place for a consumptive, and for that reason, together with the danger of infecting others, they should be rigorously excluded. This leads us to say that consumption should be made returnable to boards of health just as are other contagious and infectious diseases.

In order for boards of health to lead a successful crusade against tuberculosis, it is necessary that they know just where it exists.

If we knew the whereabouts of the patients, we could encourage and often secure such regulation of their home life as would prevent the infection of their families and friends, and could follow them, so to speak, as they go out to meet and mingle with the outer world, and endeavor to overcome these habits and conditions which we seek to prevent in their homes.

Offices, stores, factories and all places where employees are wont to resort, may become centers of infection if the proper precautions are not observed. Dr. Marfan, of the Faculty of Medicine, Paris, is authority for the details in the following case: In a mercantile establishment in that city, twenty-two persons were employed, one of whom had consumption, and continued to work until within three months of his death, which occurred in 1878. Since that time, out of the twenty-two persons, employed fourteen have died of pulmonary tuberculosis.

It is proper to add that the room in which these people were employed was badly ventilated and badly lighted, and the air-space was insufficient. The condition of the floor was such that it could not be thoroughly cleaned, and the person who appears to have been the starting-point of the epidemic, and those who followed him, spat directly on the floor. The room was swept each morning, and sometimes the employees arrived before the sweeping was finished, and while the poisonous dust still floated in the air. Such cases as this not only prove the contagious character of the disease, but point out very forcibly to the practical sanitarian the methods necessary to prevent its propagation. Railway coaches are frequently poisoned with the germs of tuberculosis, and are, no doubt, often the means of disseminating the disease. Out of 60,000,000 people in this country, it is said 15,000,000 are traveling all the time, including those who travel by steam and ferryboats. One-fourth of our population is on the street cars or steamboats every day. A certain per cent. of these are tuberculous, as a matter of course, and in many instances their expectoration goes directly on the floor. We can all bear witness to this fact. I never enter a car without a fear that perhaps I am breathing the germs left there by some tuberculous patient, and this fear is greatly augmented when, at certain important stops the car is swept, with the result of setting the dust and dirt on the floor into motion. The chief source of danger in this matter could be avoided if these corporations were compelled to furnish their coaches, and waiting-rooms as well, with cuspidors. These, with little extra trouble, could be frequently disinfected and cleaned, and a great source of infection would be removed. I am aware that local boards of health are powerless to act in this matter, but State boards or legislative enactment might accomplish the desired result.

We have yet to speak of another means by which the bacillus tuberculosis gains entrance into the human organism, namely, by means of the milk and meat of tuberculous animals, the alimentary canal being the part first invaded by the germ. Frequent analyses made of milk from tuberculous cows, both in this country and Europe, have shown their milk to contain the characteristic bacilli. All boards of health should, and do, if they are at all efficient, investigate the milk supply of their respective towns and cities. This investigation should not begin and end with testing the milk sold by the dairymen, to see whether it is adulterated, but should begin with a careful examination of the cows that furnish the milk. The diagnosis of tuberculosis in cattle is not believed to be a very difficult matter. The symptoms to be noted are emaciation, cough, irregular respiratory movements, and tumefaction and induration of the retropharyngeal and mammary glands. Boards of health should see that all cows showing evidence of tubercular infection are condemned at once. We have the power to see that this is done, and fall short of our duty if we fail to protect the community in this way. The cruel practice of confining cows in hot and filthy stables for weeks, and even months at a time, renders them more liable to tubercular as well as other diseases. The recent order by a board of health in this State, that all milk cows should be daily taken out into the fresh air and sunlight, is one which should commend itself to every health officer in the land.

As the parasite of tuberculosis may infect the muscles and blood as well as the milk of animals, which serve as food for man, boards of health should endeavor to prevent the sale of meat from infected cattle, and the public should be informed that the only sure way of safety lies in subjecting all meat to a thorough cooking before being consumed.

Upon the discovery of Koch's bacillus, and the announcement of the fact that tuberculosis is a contagious disease, it was asked, by those who sought to oppose this theory: Why is it that we do not all become tuberculous? The answer to this is a very reasonable and satisfactory one, namely, that comparatively few persons present the proper soil for the growth and development of the germ. None of us, perhaps, have escaped taking into our bodies the bacillus tuberculosis, but either because we have not received it in sufficient numbers, or because we have not furnished the proper conditions for its development, we have escaped the disease. While it is not probable that tuberculosis is ever directly inherited, it is now generally believed that, in order to contract the disease, there must be a predisposition to it. That this predisposition is hereditary in many cases is, doubtless, true, but it may be acquired at any time in life. Just what it consists in would be difficult to say, but we do know that certain conditions, such as the scrofulous diathesis, anæmia or general bodily weakness, abnormal chest formation, with limited activity of the lungs, catarrh of the upper air-passages, bad hygienic surroundings, etc., are favorable to the development of tubercle.

These views, now generally accepted, open up another line along which we can work to prevent the spread of tuberculosis: we should endeavor to prevent or remove those conditions which render its existence possible. The statutes make it obligatory upon boards of health to look after the sanitary condition of our schools and school buildings. We should see to it that the pupils in our schools are not trained in intellect at the expense of their physical structure. Sound minds are of little value to the community unless there is a sound body as well. We should see that our schools are properly ventilated and heated, and that they are not overcrowded, and should insist on their being swept after hours, instead of just before, as is often done. We should also see that vocal culture and calisthenic exercises are a part of the system of instruction in all our schools.

It is my opinion that a person who enjoys fair health, and who makes it a daily practice when in the fresh air to expand his lungs, is not likely to become the victim of consumption. In a somewhat extensive experience in making physical examinations, I have been impressed with the seeming inability of many people to properly expand their lungs. It is a habit which, when once formed, is likely to be adhered to, and its importance should be impressed on every pupil in the schools of this State. There are laws on our statute-books looking to the prevention of the insanitary condition of all manufacturing establishments and the overcrowding of tenement-houses. Boards of health should see that these regulations are enforced as far as possible. Statistics from some of our hospitals show that a large per cent. of the patients admitted with consumption are persons, especially young women, who come from the country to work in factories, and who first become anæmic as a result of bad hygienic surroundings, and finally tuberculous.

To sum up briefly what boards of health should do to prevent consumption, we would say—

(1) In every way possible educate the public as to the true nature of the disease and the means of preventing its spread, and to so regulate the habits and lives of those affected as to prevent their becoming a source of infection to the healthy.

(2) By the careful investigation of dairies and the condemning of all cows believed to be tuberculous, and the prevention of the sale of tuberculous meat and milk.

(3) By securing such sanitary conditions and regulations in our schools, factories and homes as will have a tendency to remove or prevent any predisposition to consumption, especially among the young.

It is believed, and not without reason, that by enforcing a system of rigid preventive measures tuberculosis could be absolutely stamped out of existence after three or four generations. Is it not "a consummation devoutly to be wished," and one worthy of the best efforts of every sanitarian?

Siam from a Sanitary Point of View.

BY W. R. LEE, M.D.,

Late Visiting Surgeon to the Siamese Government Hospitals, Bangkok, Siam.

LESSONS on the benefits of a rigid observance of the laws of hygiene can, probably, be as well learned by observing the evil effects of a violation of them as a study of the good effects of the opposite course. In this regard the Siamese can teach us some useful lessons.

Much like American children, they begin their relations with hygienic laws by a vigorous and prolonged protest against the "throw bath" they are subjected to; and, while the bath is kept up all through life, it is done in such a half-hearted manner, and in such vile water, that it might as well be left undone for all the results, in the way of cleanliness, it produces.

The child's next stumble over this gigantic (?) problem is a dual one, and happens about the same time in life. The first is the foolish and harmful manner in which they are fed. All mothers who have the milk nurse their children; this part is well enough, for there can be no doubt that strong, healthy men and women are raised at the mother's breast; but, in addition to this, from a very early age they have crammed down their helpless little throats enough boiled rice to make a fair meal for an adult. With what result? Their little bellies look like balloon attachments, and are as tense and hard as a drumhead (see infant and little fellow on railing in the accompanying cut); worms abound, and the cases of acute and chronic bowel complaint are numbered by thousands. The second is found in the vile habits they are taught of smoking tobacco and chewing "beetle." The reader will not have to go to Siam to see the evil effects of tobacco; the results of its use are all about us. Add to these digusting sights others that would naturally follow the indulgence of the habit in a nursing child, and you begin to appreciate to what an extent it is carried in Siam.

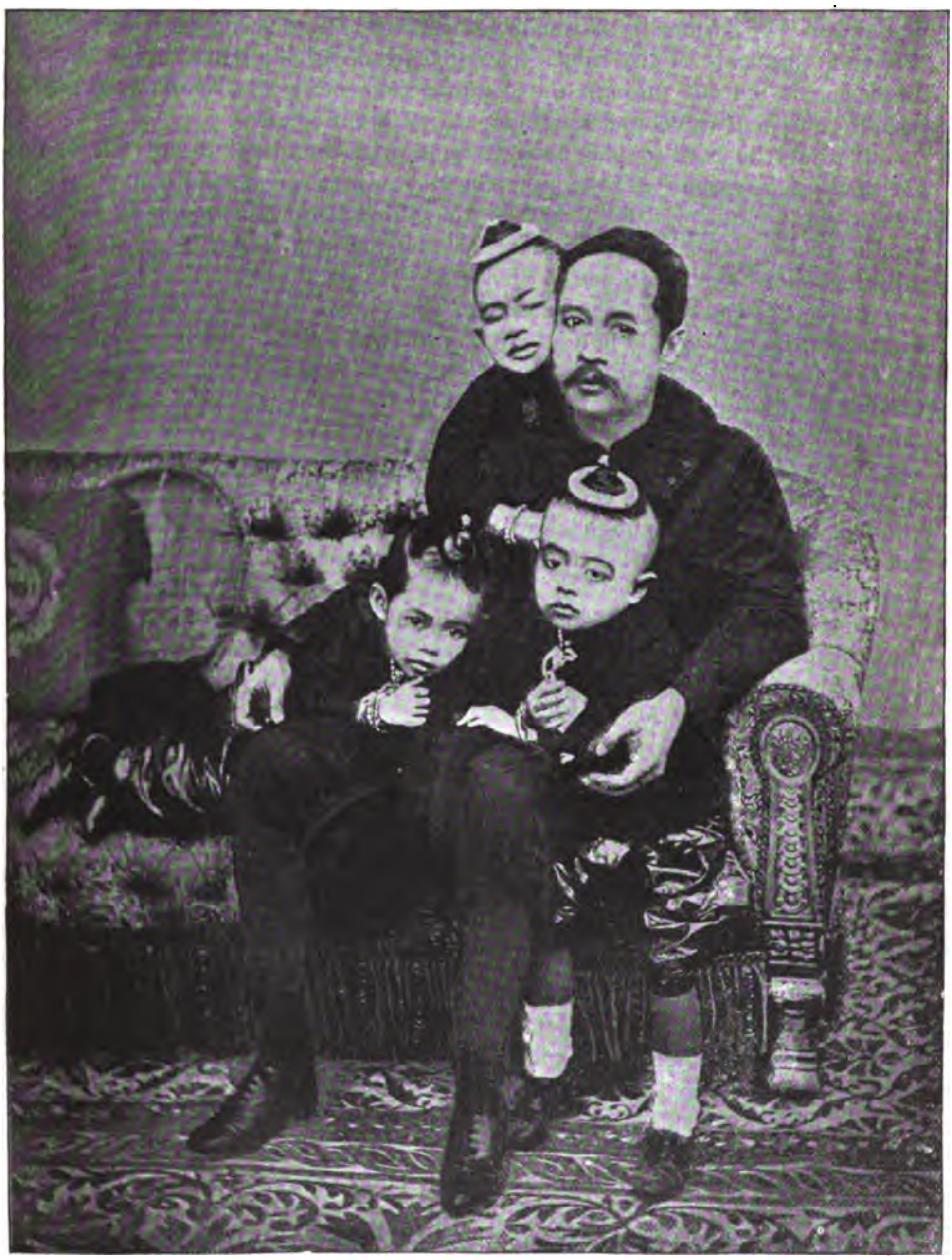
The "beetle"-chewing habit is even more repulsive.

The Siamese children, as a class, have beautiful mouths; but a few years of chewing beetle changes that beauty into hideousness; teeth falling out, those that are left stained black and reduced to fangs, from which the gums have retracted, the lips seamed, crusted and foul, being the legitimate, and, alas! almost universal result of this vile habit.

So strong a hold has this custom on the Siamese that circumspect must be the walk of a Siamese maiden, should she have the temerity to break through the custom and keep her faultless mouth in its pristine beauty and purity. And should she be so unfortunate that her native beauty and unusual mouth should have attracted the attention of some European gentleman, her character is forever ruined. Mrs. Grundy's tongue is hung in the middle for that unfortunate girl.

A Group of Native Siamese.

It is an important matter to attract the attention of even a casual observer to the great amount of water, the almost perpetual bathing, and the universal dirt of Siam.



THE KING OF SIAM AND HIS THREE SONS—THE BOY ON THE LEFT IS THE CROWN PRINCE.

Where the native lives close to a river, or on the seashore, the washing of his person is carried out with as much thoroughness as it can be without soap and towels; but when he is not so conveniently situated, his bath consists of throwing the water of the canals over his person from a native-made dipper. These canals are cut through the country, connecting the rivers, and are at once highways of travel and sewers for the adjacent country.

It would be hard to imagine water more foul than these canals get by the end of the dry season. By the time the six months of rain are over they are washed fairly clean. Is it any wonder that three-fourths of the masses of the people are afflicted with skin diseases? The problem of how to provide pure drinking water is no small one in Siam.

Europeans and the higher classes of the natives provide themselves with earthenware jars that hold half a barrel, and fill these from the tile roofs during the rainy season. A hundred of these jars, if filled during the last rains (say October 15 or 16), will last a family of four for drinking and cooking until the rains begin again, about April 1. But the lower classes of the people find this sort of "ant-wisdom," too much like work, and are contented to draw their supply from the rivers and canals.

The rivers, if far enough above large towns, furnish *fair* drinking water; but the canals ———, if not fit to wash in, what a place to draw drinking water from!

In a canal in the city of Bangkok I have seen, *in a distance of fifty feet*, a tanyard drain pouring a two-by-six-inch stream of refuse into the canal, four persons bathing, a chinese laundry washing clothes, the carcass of a dog, and a native *carrying drinking water*.

While in charge of Bangkok Hospital, I built a charcoal filter for my servants, but was not able to persuade them to filter their drinking water; it was too much work. Is it any wonder that dysentery and cholera slay thousands of these people every year?

The King, a wide-awake, progressive, educated monarch, does all in his power to improve this condition of things, but it is slow and hard work.

The planning of the dwelling-houses of the poorer classes is such as to make the least work possible.

The house itself is built on stilts of bamboo, leaving the space under the floor open for a stable and pig-pen. Everything is swept through a convenient hole in the floor; much of the immense amount of spitting, made necessary by the "beetle" chewing, goes through the same hole, until after a year or two of fermentation this hole (or the ground under it) emits something in the way of odors.

Vaccine virus is supplied to the people by the King at a mere nominal cost, but the vaccination is done in large part by Chinese itinerant doctors, who guarantee "a take." They only get one tical (sixty-four cents) a person, and as a large part of the virus loses its virtue during the long voyage from London, they must re-vaccinate from human lymph (?) in order to come out even, financially. I believe I am safe in saying that three-fourths of all the cases that came under my care while in Siam had a marked specific history. Among the lower classes syphilis is almost universal.

To these Chinese doctors, any sore that involves the skin after vaccination is a vaccine sore, and fulfills the contract between him and his patient, also giving him possession of the "scab."

Now, if you will put these last four sentences together, let your imagination tell you what vaccination amounts to in Siam.

THE QUEEN OF SIAM AND HER TWO DAUGHTERS.

I have seen babies break out, after such vaccination, from head to foot, with specific sores, but not one bear the slightest resemblance to a vaccine sore.

Here, again, the King, who desires to carry forward vaccination in his kingdom, is almost powerless to remedy matters. Dr. T. Heyward Hays, of the King's Medical Staff, is now training a class of native boys in Western medical science, in the hope that they will do this work more intelligently.

Notwithstanding the fact that for a century or more cholera, smallpox and leprosy have slain thousands of people a year, they seem to have no knowledge of laws of contagion and heredity. I have seen smallpox patients walk the streets of Bangkok when thousands of people would pass them in an hour. I have seen cases of cholera brought to the hospitals in public conveyances that would be literally covered with excreta; and, after the patient was dumped (literally) at the hospital gate, the cab-driver would immediately let his conveyance to other passengers with no more of a cleaning than could be hastily given with a bunch of straw. Leprous people not only live in the closest relations but intermarry with the clean.

After the life of a Siamese has run such a course as these awful violations of hygienic laws will allow him, his *last* rite is performed in a manner that can be called clean anyway. If he is rich enough to afford it, he is cremated, not with the almost instantaneous process that is carried on in this country, but by a slow fire built about the body with small firewood. This is carried out with all grades of ceremonial show varying in degree as his personal importance or the size of his purse demands.

His pauper neighbor has still another way of passing to his long rest. The bodies of criminals, and those who are too poor to pay for the more showy "burning," are taken to a temple ground and thrown out for vultures and dogs to devour. I have seen three bodies at once completely covered with vultures and dogs. Fifteen or twenty minutes are sufficient time to reduce a body to clean picked, disarticulated bones. These are thrown in a heap, and when some rich Buddhist wants to make merit for himself, he will furnish sufficient means to have them all burned at once. While repulsive to look upon, it is certainly a clean way of disposing of the dead, and doubtless prevents much contagion.

In the surgical side of the hospitals, I gave up in despair ever teaching a native nurse how to be clean. Not possessing enough of the language to make a good scold, I have often relieved my feelings in pure English, and then horrify them by calling for a basin of hot water, soap and a brush, and, rolling up my sleeves, scour some poor, black skin clean enough for an operation. They would promise better for the future. Oh, yes; they understood now since the doctor had shown them, and the next day bring me a basin of water from the canal that any American housewife would condemn as too dirty to wash skillets in.

The worst features have been held back for decency's sake, but enough has been shown to let those interested know what the condition of affairs is. Those of us who are especially interested in Siam hope, with the help of the King and his able corps of ministers, to be able to gradually lead this people out of their gross darkness into cleaner habits.

THOROUGH mastication and insalivation of our food make good blood, and good blood is at the bottom of good health.

The Sanitary Beneficence of American Institutions.*

BY BENJAMIN LEE, A.M., M.D.,
Secretary of the State Board of Health of Pennsylvania.

MR. PROVOST, LADIES AND GENTLEMEN :—I trust there is no one present on this memorial day and this auspicious occasion whose bosom does not swell with patriotic pride at the thought that he is an American citizen.

Recalling, as we are wont, the virtues of him whom, above all others, we are accustomed to regard as the founder of our liberties, let it be a part of our grateful observance to sum up the blessings which flow from them. And that we may the better appreciate them, let us compare the wretched lot of the denizens of cities of the old world, groaning under the iron heel of despotism, with our own more highly-favored circumstances. The tyrannical rulers of those down trodden peoples actually presume to interfere with their meats and drinks, forbidding them to quench their thirst with water enriched by the sewage of cities, hallowed by the infusion of the remains of their dead ancestors, or delicately tinted with the drainage of coal mines; or to refresh themselves with beer rendered aromatic and enlivening by cocculus Indicus and strychnine; or wine manufactured from the juicy apple and the generous turnip; or tea composed of rotten leaves and catechu, and colored with verdigris, or coffee innocent of Java and Mocha ; or chocolate in which the offensive cocoa-butter has been entirely replaced with tallow. They are not permitted to eat the flesh of tuberculous cattle and trichinous swine, while we are freely allowed to feast on those which have been condemned for their markets. Even the little children are forbidden the delights of sucking candy brilliant with arsenic, or munching buns beautified with chrome yellow. The very air which they breathe is deprived of the fragrant and nutritious elements which we enjoy in ours, by the removal of manure and other putrefactive substances from the streets before they have had time to pulverize or decompose.

If they desire to ride in public conveyances they are compelled to obsequiously sit instead of having the opportunity of athletic exercise and muscular development by hanging on to straps suspended from the roof of the vehicle ; or if perchance they prefer their own equipages, they have no escape from the dull monotony of smooth and noiseless pavements, so different from our charming variety of cobblestone and car-track, of hillock and hollow. Thus these unfortunates are hedged in on every side by onerous ordinances and petty infringements of their liberties. When we add the humiliating fact that those who govern their cities, and inflict these burdens upon them, are men of their own race and nation, instead of alien birth or parentage, what is needed to complete the picture of their misery or to demonstrate the immense superiority of our free institutions? As a result of the admirable training which we receive from the foreigners in authority over us, we have acquired, to a distinguished degree, the divine virtue of patience; so that an American citizen is recognized at once all over Europe by the lamb-like way in which he submits to physical inconveniences and pecuniary impositions.

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* An address delivered at the opening of the Department of Hygiene of the University of Pennsylvania, February 22, 1892.

But lest this hurried resumé of our causes for exultation should make us too vainglorious, I would ask your attention for a moment to a feature of the republican form of government which is perhaps less encouraging.

It has been said, in regard to our legislative bodies, that, as a fountain cannot rise above its source, so we cannot expect in our legislatures a higher degree of intelligence and education than the average of that possessed by all classes of the population, whom they represent, by whom they are elevated to office, and whom they fear to offend.

It follows from this that legislation of what may be termed the higher order, which recognizes the arts and sciences, and aims to lift the people to a higher plane of culture and civilization, and which is founded on the most recent revelations of science, is not to be expected of our municipal and State legislators. And, indeed, so true is this of our own State, that a clause exists in the Constitution forbidding the outlay of the public funds for any such purposes. Hence, if institutions of learning of a high grade, or devoted to specific objects, are to exist among us, they must owe their origin, and to a great extent their support, to the public spirit and generosity of private citizens. Perhaps this is not an unmixed evil. Perhaps it is well that in the mad haste to get rich quickly, which characterizes our people, there should be a constantly present condition which evokes brilliant examples of public giving as contrasted with individual grasping. Certainly, magnificent instances of such liberality exist all over our broad land, and perhaps nowhere have more frequent benefactions of this kind increased the opportunities of a great institution of learning, than have of late years been poured into the lap of the venerable University who has called us together to-day to rejoice with her over the reception of her latest gift, and the opening of the newest and loveliest flower in her coronal.

At a regular meeting of the State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania, held November 12 and 13, 1891, a communication was received from the Trustees of this University announcing the early opening of its new Laboratory of Hygiene, and presenting a brief curriculum of its proposed line of instruction; whereupon the following resolution was adopted:

Resolved, That this Board has received, with sincere satisfaction, the formal announcement of the approaching opening of the Laboratory of Hygiene of the University of Pennsylvania, considering that this event marks an era in the progress, not of science only, but of civilization, in this State.

Resolved, That the Secretary be instructed to communicate with Dr. William Pepper, Provost of the University, and with Dr. John S. Billings, Director of the Laboratory of Hygiene, suggesting a conference for the purpose of formulating a plan by which this Board may avail itself practically of the facilities to be afforded by the Laboratory for the investigation of disease, and of the means for its prevention, for the analysis of foods, water and other beverages, and for bacteriological studies.

Resolved, That in a definite co-operation between the University and the State Board of Health in the prosecution of such researches, this Board recognizes an opportunity not only for mutual aid, but for advantage of the greatest moment to the entire Commonwealth."

In accordance with the above resolution such a conference has been held, and to me has been assigned the duty of briefly stating the conclusions which were reached, premising, however, that they have not as yet been submitted to the trustees, and may be to some extent modified before either body is called upon to consider them.

The necessity of a Laboratory of Hygiene to the State Board of Health has been urgently felt, and arises out of the duties imposed upon the latter by Section 5 of the Act of Assembly establishing it, which reads as follows:

"The State Board of Health and Vital Statistics shall have the general supervision of the health and lives of the citizens of the Commonwealth, and shall especially study its vital statistics. It shall make sanitary investigations, and inquiries respecting the causes of disease, and especially epidemic diseases, including those of domestic animals, the sources of mortality, and the effects of localities, employment, conditions, habits, food, beverage and medicine on the health of the people. It shall also disseminate information upon these and similar subjects among the people. It shall, when required by the Governor or the Legislature, and at such other times as it deems important, institute sanitary inspections of public institutions or places throughout the State."

Now, to carry out in any adequate degree the purposes of the law with regard to investigating the causes of disease, and the effects of foods, beverages and medicines on the health of the people, two things, among others, are absolutely essential: first, that the Board should have means and opportunities for making or procuring chemical analyses; and, secondly, that it should have means and opportunities for prosecuting what are now known as bacteriological examinations—the study of the germs of disease. And it goes without saying that where the interests of the health and lives of five million people are concerned, these means and opportunities should be on generous scale, and should conform to the most recent developments of scientific hygienic research, both in this country and in Europe. It does not at all meet the intention and requirements of the statute, that the Secretary of the Board should spend a few cents on test-tubes and chemicals, or press his old Dolland microscope, handed down from a previous generation, into the service of the State. Nor is it fitting that this great Commonwealth, with its millions of revenue, should be depending, as it has done—I say it with burning cheeks—on the charity of private chemists, who have, in a spirit of generous patriotism, placed their services at the disposal of the Board in order to enable it, in some slight degree, to meet the claims that are constantly and properly made upon it for the analyses of suspected waters and foods. It is hoped, therefore, that the trustees will see their way clear to allowing the Board to refer applications of this kind to the Laboratory for investigation. The Board, for its part, will make every effort to obtain from the Legislature a reasonable appropriation for such purposes, distinct from its general appropriation, which will enable it to meet, at least, the cost of all work done for the State.

Further, Section 9, of the Act creating the Board, instructs it, "from time to time, to engage suitable persons to render sanitary service, or to make or supervise practical and scientific investigations and examinations requiring expert skill, and to prepare plans and reports relative thereto." Observe the phrases: "suitable persons," "expert skill." Heretofore the Board has been compelled to call to its aid for these objects simply medical men, intelligent, educated, sound practitioners, but without that special training and equipment which would render them "suitable persons" in any strict, technical construction of the expression, or would furnish them with "expert skill." Here, again, the Laboratory will prove the right hand of the Board, giving just that instruction which a sanitary inspector needs to fit him for his special work. And, on its side, it will be the object of the Board to pursue more persistently, even, than it has in the past, its purpose of obtaining a thorough sanitary organization of the State under legislative sanction and compulsion, the result of which will be to create a constantly increasing demand for just such trained, practical sanitarians as this school will graduate. In this view of the case it might be the part of wisdom for you, gentlemen, Trustees, to place a certain number of scholarships at the disposal of the Board.

Finally, it is desirable that publicity should be given to the important work which will be carried on in this institute, which, I risk nothing in saying, after a careful inspection, and after comparison with other similar laboratories, will be far in advance of any in this country and the peer of any abroad,—it is highly desirable, I say, that this work should be frequently brought to the notice of the Legislature, the medical profession and the public; and I therefore suggest that its director present a stated report, quarterly or at such other interval as may be deemed expedient, to the State Board of Health, of all investigations here prosecuted directly in the interest of the public health, which report shall form a portion of the Annual Report of the Board, to be transmitted to the Governor, and of which a certain number of reprints shall be furnished to the trustees for general distribution as well as for preservation in the archives and various libraries of the University.

The edifice, whose inauguration has drawn our willing feet hitherward, ladies and gentlemen, is a temple of Hygeia in a truer sense than those fair structures whose marbles flashed back the morning light on the hills of Greece and Rome.

It is in honor of the "sweet, smiling Goddess of Health" that we are met.

The ancients were right in making the divinity whose especial care was the bestowment and maintenance of health, a feminine conception, since woman, as the wife, the mother, the nurse, has for her special function that daily ministry to the bodily welfare of husband and of offspring, that constant presence in and care of the home which are the two essentials to health in the individual and in the family.

Her embodiment must needs have been youthful, as presenting ever to the mind of the entranced beholder that period of life when a blood unvitiated by vice or excess courses through a frame unmarred by violence or exposure, and colors a cheek unstained by sin. Purity must look forth from her eyes and truth sit enthroned on her brow, for unbridled passion and soul-torturing deceit are alike inimicable to perfect health. Her form must be lithe, vigorous and well-nourished, but not redundant, as warning her devotees that neither asceticism on the one hand, nor gluttony and voluptuousness on the other, are allowable in her worship. Cheerfulness must radiate from her every feature, for gloom and despondency are the recognized foes of sanity, whether of body or mind, and over all pervading expression of face and pose of limb must be that indescribable charm of gentleness, as teaching her votaries that in the mutual interchange of kindly sentiment and act they shall greatly promote the common health and the common weal. And so has the charming inspiration come down to us, immortalized by the sculptor's art, a frank and joyous maiden, full of tender grace, robed in chaste and flowing vestment. The fabled daughter of Æsculapius, her temple ever nestled under the shadow of his loftier fane, as does that which we dedicate to-day, and her lovely image was sometimes seen in the same shrine even side by side with his severer figure.

May I be pardoned for appropriating to her praise the beautiful sonnet of America's most American poet, although addressed by him to a sister divinity, whom also we glorify on this national anniversary—

Who cometh over the hills,
  Her garments with morning sweet,
The dance of a thousand rills
  Making music before her feet?
Her presence freshens the air,
  Sunshine steals light from her face,
The leaden footsteps of care
  Leap to the tune of her pace.
Fairness of all that is fair,
  Grace at the heart of all grace!
Sweetener of hut and of hall,
  Bringer of life out of naught,
Hygeia, oh, fairest of all
  The daughters of Time and Thought.

Cremation of Nightsoil and Garbage at Findlay, Ohio.

BY M. M. CARROTHERS, M.D.,

Member of the Board of Health of Findlay.

In presenting a paper on the cremation of nightsoil and garbage, it may be well to call attention to the circumstances that suggested it.

Findlay is located on the Blanchard River, a stream about 100 feet in width, with a limestone-rock bottom. The drift above the rock is generally from ten to forty feet in depth. Through the greater part of this drift nature had deposited two layers of sand and gravel, and each capable of supplying an abundance of water. There is also a good supply of water at a depth of a few feet in the rock. During the boom, when houses were springing up rapidly, no questions were asked about a *healthy* supply of water, but how it could be obtained quickly and with the least possible expense. An excavation of a few feet was rewarded by a supply of what appeared to be clear, sparkling water. Not very remote from, and perhaps into, the same strata of sand and water an excavation was made for a privy vault.

The second strata of sand and gravel, at a depth of about fifteen feet, was protected by a hard-pan, and would have been a desirable water supply had there been no invasion for other purposes. It came to the knowledge of the Board of Health, that in a few instances wells had been abandoned and converted into receptacles for nightsoil. The city had a very inadequate system of sewerage, to which was attached, by permission of the council for water purposes only, a large number of closets.

The outlet of this sewer system was in the river, near the main street bridge, and nearly in the heart of the city.

The lowlands or flats along Eagle Creek, a branch of the main stream, had been for years the dumping-ground of the garbage and refuse from stores, streets, barnyards, etc. From the main stream, and in some instances even below where the sewer emptied, winter after winter, had been collected the ice crop, contaminated as it was by the drainage from this material. A strip of timberland in one of the new additions had been used as a burial ground for dead animals. It had received the name of the Horse Cemetery. When Findlay doffed her village garments and was about to take on city proportions, the timber was cleared off and the land plotted and sold for building lots. An analysis of the well-water in that locality would be liable to show it rich in Horseford's phosphates, peptones, debris and salines. A number of cases of typhoid fever resulted in that addition. The people would use the water from their shallow wells in defiance of the warnings of the Board of Health.

With these various appalling features the Board had to contend and devise some means to overcome what appeared to threaten the health and lives of the people. We had an abundance of natural gas as a fuel, and the idea of the complete destruction of all this disease-breeding material by cremation was suggested by the Board of Health to the council. A committee of the council visited Pittsburg and Des Moines, Iowa, and arranged for what is known as the Engle Cremator. It has been in operation for over two years and is regarded as a fixed institution. There was consumed during the year:

	1890.	1891.
Loads of garbage	3,892	3,422
Barrels of nightsoil	1,463	3,719
Dead horses	123	130
" cows	33	24
" dogs	91	119
" hogs	46	44

The cost of crematory was	$3,500 00
" " grounds and building	3,100 00
" " repairing and painting	292 21
" " labor at crematory for past year	1,281 71

It is operated day and night, and we pay the superintendent $100 per month, and he hires his own assistant.

The crematory consists of two furnaces. The larger furnace is called the garbage and nightsoil furnace. It is twenty-two feet long and six feet wide. The stock furnace is ten feet long and four feet wide. Both are lined on the inside with fire-clay brick. Both are at right angles, or in the shape of an L, and joined at the smoke-stack. The interiors of the furnaces are divided by the grate-bars supported on piers. The grate-bars are of heavy railroad iron.

Fire is placed beneath the grates to aid in the evaporation of the liquid constituents of nightsoil and garbage, which constitute a very large percentage of such materials. Fire is also applied to the material to be destroyed. From this emanate smoke, gases and foul odors, which are completely destroyed in a small chamber heated to nearly a white heat by a flame near the entrance to the stack. There are, therefore, practically, no unpleasant odors either from the garbage or stock furnaces.

There may be offensive odors in or about the building if sufficient care is not observed as to cleanliness and the dumping of nightsoil or garbage, or any inattention to the prompt disposal of animal matter.

There is less offensive odor emanating from the operation of the crematory than may be met with in many of the backyards of residences, or that produced by a pig-stye containing one little fellow, which boards of health are frequently required to have removed outside of the city limits. Nightsoil is conveyed to the crematory in air-tight barrels and during the night; garbage and dead animals are conveyed at any time, with the restriction that anything startling or offensive shall be conveyed under cover. It requires from thirty to fifty minutes to consume the carcass of a horse. Dropped into the hot furnace, there is but one puff of smoke, and that is consumed as it enters the hot chamber near the stack. Animal matter, when ignited, aids in its own combustion and does not require much fuel.

It is estimated that a barrel of nightsoil is equal to a common wagon-load or cubic yard of garbage. To this I have added the number of large animals, such as horses and cows, and one-fifth the number of small animals, such as dogs and hogs, as equivalent to a barrel or wagon-load. Dividing the yearly expense by the total equivalent would make the cost of cremation about seventeen cents per yard or barrel.

As upward of ninety per cent. of nightsoil and garbage is water, it occurs to me that much attention should be paid in the construction of a cremator to an adequate evaporating surface. The management of a crematory requires good common sense. The manager must know the difference between a consuming and a melting heat. If the heat is raised too high it endangers the grates and furnaces. It vitrifies the surface of the nightsoil and the heat is expended on the walls of the furnace. We had a costly experience in that direction. A political favorite was placed in charge, without regard to qualification or the application of that necessary ingredient, common sense; a creature whose belly was his God, and if he had any spirit, it was of that kind that is found in the bowl. In less than three days he had seriously injured the furnaces and warped the grate-bars by raising the heat from a consuming to a melting point.

Gas is the most convenient and easily managed fuel for the purpose. I presume crude oil, sprayed into the furnace, would be equally good. Coal or wood will answer the purpose well, but requires more labor.

The furnaces are so constructed that the ashes can be removed at any time while in operation. The ashes and residue from the stock furnace contain about ten per cent. of phosphates and make a good fertilizer. The ashes from the garbage furnace contain about five per cent. of phosphates.

The good accomplished by our crematory may not be capable of demonstration. I am not able to say how much more of sickness or how many more deaths would have occurred had we not protected, as far as possible, our soil from pollution, and, secondarily, our water supply from pollution, and the destruction of poisonous gasses arising from human excrement and decaying animal and vegetable matter. We have been complimented during the past summer by the Secretary of the State Board of Health, as being the freest city of its size in the State from contagious, infectious and epidemic diseases; and this, too, in the face of many remaining insalutary conditions. We are constructing a system of sewerage which, when completed, and with proper vigilance upon the part of the local Board of Health in protecting our water supply and exercising a supervision over our meat and dairy supplies, with the oxidation of all our waste and refuse products, will insure us a city second to none in point of sanitation.

The growing desideratum is better sanitation. Educators are turning their attention to the prevention of disease.

The physician is often compelled to admit his helplessness and mourn the inability of medical science to cope with the advancing army of germs, as he stands at the bedside of his patient, who has been for weeks or months slowly imbibing polluted water, or inhaling poisonous gasses, or trying to subsist upon that which should bless, and curse not, until every fiber is tainted with decay.

There may be other methods of disposing of nightsoil and garbage. In some localities there may be a demand for them as fertilizers. They may be conveyed away by streams to larger bodies of water, but the germs which, imbedded in ice, become active when liberated, may not find a grave even in the ocean. There is a pleasing sense of security in knowing that all this disease-breeding material, with all the germs for which it forms a fruitful nidus, can be radically destroyed by cremation.

It will interest our out-of-town readers to visit the Department of Hygiene of the University of Pennsylvania when next in this city.

The Hygiene of Young Womanhood.

BY W. THORNTON PARKER, M.D., M.M.S.S.,
Manchester by-the-Sea, Mass.

IN a recent article in the *Century Magazine*, on "Women at an English University," the following statement appears: "The great educational movement for women, which was seriously begun some twenty-five to thirty years ago, was not the outcome of a moment's impulse; it was rather the result of opinions which had been slowly working their way through society since the beginning of the century." This is true enough; but the question of the improvement of women, physically, goes far back into Egypt's ancient history.

True physical culture, for women, has been in the mind of prominent medical men for a much longer period than a century, but the activity of the movement may, perhaps, be of very recent date; that it *has* come into being, and the importance of the work, is very generally recognized, and we shall be certain to find that its advent is needed. With the prevailing "nervous prostration" in our women, it is high time that something should be undertaken for a remedy. The remedy for "nerve-strain" and partial or incomplete activity, and the over-stimulation of all the senses in women, is *practical instruction in physical culture.* Increase the physical exercise and out-of-door life. Women must be taught to recognize that their organization is peculiar, and that their womanly functions cannot be removed, but must be acknowledged and properly cared for. A great hinderance to the accomplishment of hygienic reform and physical culture in women is due to their ignorance of physiology, and to their indifference an carelessness during young womanhood. The compression of dress and the requirements of unhealthy fashions are a constant menace to health. The use of corsets contributes largely to disorders of the stomach and bowels, compression and misplacement of pelvic organs, serious disturbance of circulation, and other evils. The use of the corset for women cannot be too strongly condemned. It is almost never that we can find one that can wear corsets with any safety to health. In our young girls there is too much of nerve and emotion and the strain of class competition. These evils, with the stress of constant work, constant excitability and constant tire, must be abolished if we would attempt to afford relief. The routine must be broken, the abnormal excitement abated. The everlasting train of thought with so many seems to be, how can we best overcome, not the reproach of women, or the shame of sterility, but the *reproach of being a normal woman at all?*

This damaging nerve-strain must be counteracted by wholesome out-of-door life made happy and practical. Physical culture in any gymnasium will not compensate for the real normal out-of-door exercise. How many of the young ladies who are teachers of physical culture would be able to pass an examination by medical men as normal women? We have had under our care, and in our acquaintance, young ladies who wish to be teachers after the most approved methods, who needed rest and out-of-door life more than any of the pupils they would be likely to obtain. Just at present physical culture seems to be "*the* popular fad," and a great deal of money and time is being wasted in keeping girls in-doors to learn and practice this system, when a few hours out of doors, in the country or on the water, would be worth a great deal of time spent in drilling and studying "theory" in-doors! The best physical culture for man or woman is to be found in out-of-door life, boating, bathing, horseback-riding, and that which all can have, rich or poor—walking. Let us close the gymnasiums and have classes in walking, for a normal change. During the periods of "heightened susceptibility," the school-girl needs out-of-door life; and it is reasonable to infer that any "method" of gymnastics is more apt to induce mental and bodily harm than to accomplish any good at all. We can more readily provide aid for our school-girls, but how little can be done for our working-girls. The speech of Major Henry Winn, at the recent meeting of the "People's Party," at Faneuil Hall, has the right kind of "politics" in it. He said: "Give the laborer what he earns; do not steal from what he consumes; concede to him such *hours that he can make the best of himself.*" And this must mean the women laborers as well as the men. The school-teacher, the shop-girl, the mill-operative, the typewriter—everyone is entitled to justice; and the time is approaching very rapidly, too, when they will have it, be the battle long or short.

This matter of the health of shop-girls is well worth attention in this connection. During the holiday seasons, especially, many of the stores employ extra clerks, mostly young girls from 16 to 19 years of age. These young people—many of them, at least—have never served before, and the many hours of confinement, and the wearying attention to the demands of customers, who are often very careless and persistent in requiring unreasonable attention, fatigues them. Women especially are careless in this respect, and give a great deal of trouble often when they do not intend to make any purchase at all, seemingly indifferent to the weariness of the clerks. The shopkeepers themselves are not always as merciful as they might be to their faithful and not overpaid attendants, and seem intent only in keeping them "busy." Few provide chairs for their clerks, forcing them to remain on their feet for hours. There are many diseases and physical injuries induced by the long-continued standing upon the feet. Medical men are called upon constantly to treat diseases of a serious nature in women, resulting from this constant standing, often in cold rooms and over floors chilled by draughts of cold air. Indeed, many injuries and disorders, covering years of suffering, have had their origin in this tiresome and confining life of the shop-girls. Their time for meals and recreation is so limited that the opportunity for sufficient fresh air, sunlight and exercise is wanting, and a chain of unfavorable conditions must necessarily result. Hastening in the morning, many from out of town, rising very early and taking an hour's ride into the city, they reach the shop, office or factory already weary. The breakfast has been little worth the name—a cup of sour coffee, some doughy bread, little if anything more. The short noon recess allows too little time to eat. Five or six o'clock gives them a chance to take their weary way homeward, where, perhaps, after an hour's journey and two hours of time from the office, they are forced to prepare the family dinner, and after that, work an hour or two sewing and repairing. For rest, a plain, uncomfortable room. This is the weary grind, the toil of these "white slaves." Day after day, week after week, sick or well, happiness a rarity, sadness ever present, the hard lot goes on, until worn-out nature at last succumbs to the inevitable. Can you find healthy, normal women with such an origin?

But, whether it be the daughter of the rich or of the poor, both are in need of wholesome instruction, as well as of normal out-of-door exercise. We must tell them what is the normal standard woman; what are the normal functions of woman; and how their action is to be encouraged, and how it can be injured and well-nigh destroyed. We must create a public sentiment in favor of healthy, normal women; educated, refined, healthy, vigorous; strong in mind, in the right sense of that term; self-respecting and normal in body. Mental as well as physical health depends upon this attention to the perfection of the functions of the body. It is false teaching to lead away from the normal life, and it is equally false to declare that educated women cannot be healthy, vigorous women. Education, properly afforded and under hygienic control, elevates, ennobles woman; and if her body is in normal health, she is abundantly able to acquire the highest honors in literary pursuits. False teaching leads away from the goal of married life; all the paths blessed by the Creator lead men and women to that most honorable and necessary institution which ill-health has done so much to injure. No other than a married life is truly normal; none more likely to lead to peace and longevity; none where happiness and honor are more likely to be the reward. Responsibilities, cares and sorrows can never wholly destroy the happiness of honorable wedlock; while for the unmarried the death-rate is higher, the formation of character is apt to be inferior, and every sort of drawback and disappointment is more likely to be the reward. We do not arrive at these conclusions through sickly sentimentalism; we *know* this, after the tests and examinations of long professional experience, even if the laws of God had not already declared the truth from the *earliest of days*. When we lead our young girls, at the time of puberty and during the incipiency of womanly life, to assume heavy physical and mental burdens, we are doing them an actual wrong. They need at this time the most careful consideration and thoughtful protection. We must strive to develop in them healthy minds and bodies, that they may be able to become healthy, normal women. It is at this very important stage of life that so many are burdened with too heavy cares of school-work and social duties, too often given a peep at society and taught what to do when they can at last "come out." These injuries we find among the well-to-do, but among the poorer the drudgery of service in shop, mill or office, poor food, poor shelter, wretched clothing, and the interminable grind of labor. Our cities, towns and villages, too, are full of examples of this prevailing evil—this slavery among our white girls. The inevitable breaking down which follows in all degrees of physical impairment, from simple anæmia to profound invalidism, results from the wretched indifference to health which is everywhere the fruit of selfishness and greed. This breaking down at this time in a girl's life may mean more or less suffering for years, or even for life; lack of normal development and lessened capacity for reproduction, amounting often to actual sterility; general morbidness verging on insanity, and a condition of body so miserable that even the offspring is permanently injured. The fruit of such women is to be found in almshouse, hospital, insane asylum and in our prisons.

We spend lavishly on monuments and palaces and on useless princes and potentates. The mental and physical ransom of countless noble women is squandered in an evening of municipal extravagance.

We see in the pinched, white faces of our girls the symptoms pointing to great injury from overwork, whether it be mental or physical. We find, on inquiry, irregularity of functions, even amounting to stoppage. There is so little blood, the whole body is miserable, the appetite is absolutely starved out of them, nervousness is increased to a morbid extreme. These unhappy conditions tend to make them indifferent to their bodily functions, and lack of precaution in the care of health makes "bad matters worse," until at last the evil has become well seated, and is, in fact, "*chronic.*" They are also ignorant, and do not appreciate the value of *rest*, the actual need, in fact, of some "let up" of mental and bodily activity. A normal healthy woman needs this rest of mind and body; and if she does not have it, she will soon be taught by that bad teacher, experience, that womanly functions must be recognized. The idea that it is a shame to be a woman must be gotten rid of, and that her peculiar functions were given to her by the Creator for the wisest and most important reasons should be impressed upon her, that her body may be governed accordingly. A normal healthy girl, who is brought up by her mother to be careful of her body, as well as of her soul and mind, will receive blessings which her less fortunate sisters do not dream of. The details of "little things" concerning health are well worthy of attention. "By great deeds show that thou canst little do and do them not," says Herbert; but he also says: "Slight those who say amidst their sickly health, *thou* liv'st by rule."

How seldom we meet with women who sit down when they have nothing to do. "Sit down" is a good rule for all women to remember. They should sit down in the morning when combing their hair, after breakfast, and, indeed, after every meal. They should *sit down* when giving orders to servants, and when some gossiping neighbor comes to the door merely to say "one word." "Standing around" is one of the failings of American women. Hasty eating is another; and starvation lunches of tea and toast, cake and preserves, is another. More Americans are starved to death than over-fed. We do not begin to eat as much *nourishing* food as other nations. Our prevailing dyspepsia comes from irregular meals having more variety than quality, eaten too hastily, and fairly drowned into slops with poor tea, coffee, skimmed milk or deadly ice water. It is a fact, although an unwelcome one, that comparatively few American housewives know what to provide for their families. Medical men recognize these causes in the common disorders peculiar to women.

Too little attention is paid to hygiene; bathing is neglected, a warm bath Saturday nights being quite enough for most people, when a daily cold sponge-bath is almost always needed. Too much excitement, too much of which creates nervousness; too little out-of-door exercise; unhealthy sleeping and living rooms; too little of nourishing food; too much of cakes, candies, tea and pickles; and, last but not least, errors in dress. Here is a field for *work!* In a practice covering eighteen years, I have never yet found a woman who could wear corsets without harm to herself. For married women, corsets should be considered too dangerous to use at all, and especially is this true of women in the period of child-bearing. In unmarried women, I have found a very large proportion of misplacements, due entirely to the use, or, rather, the abuse, of *corsets;* for all corsets *are* injurious, and all corsets promote disease of the pelvic organs, and very frequently are the exciting cause of consumption.

Cleanliness of the person is one of the greatest incentives to longevity. By the morning sponge-bath, the frequent sitz-bath, the weekly warm-bath, with the attention to details mentioned in this paper, a great deal of good can be accomplished; and it is a pleasure to observe that in our large cities, where hygiene is better understood, and where medical men are, perhaps, better able to give advice and the patient better able to follow it, our young women *are healthier* and better educated than they used to be. Strange as it may seem, our country girls are no longer our most shining examples of health! Their advantages for education in every department are less than their favored city sisters, and the drudgery of village life and the narrowness of village ideas work a damaging influence on those who ought to have the advantage in the race for health. "*Mens sana in corpore sano*" is the motto now; and, as hygienic lessons are multiplied, and the newspaper and magazine are read everywhere, words to the wise will sooner or later bear fruit.

Hysteria in the Nursery.

The Paris correspondent of *The Lancet*, December 12, 1891, states that Dr. Chaumier, of Tours, recently read a paper before the Académie de Médicine on "Hysteria in Infants." Notes of 200 cases, observed in children under two years of age, led the worthy Frenchman to believe that what ignorant mothers, nurses and doctors have considered convulsions, "tantrums," or fits of bad temper, are in reality more or less severe attacks of hysteria. According to Dr. Chaumier, the symptoms of the mildest attack of infantile hysteria are repeated, and causeless accesses of rage manifested by loud cries. More serious attacks may be recognized by a stiffening of the limbs, with turgidity of the face, and possibly tremblings. Some hysterical babies will roll on the floor or the bed, executing extensive movements of the arms or legs without losing consciousness; others lose consciousness, and the body is either rigid or limp. There are also *grandes attaques* even among babies. The prognosis is good, and what may be denominated "cradle hysteria" is more amenable to treatment than the drawing-room variety.—*Med. Record.*

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EDITORIAL.

A Secretary of Public Health.

HAVE the 20,000 letters, for which we plead in our last issue, been mailed to Washington yet? If not, it is not yet too late; Congress is still in session, and the bill relating to this vital addition to the Cabinet of the President has not yet been disposed of. Let us again earnestly invoke the aid of the readers of THE ANNALS toward the accomplishment of this most necessary legislation.

The Notification of Contagious Disease.

IT would, no doubt, help greatly toward the annihilation of contagious disease, if some means could be devised whereby all physicians could be induced to report, to the proper health authority, all such cases occurring in their practice. By such notification isolation could be more generally secured, and we all know that in isolation we have one of the most potent of preventive factors. As matters now stand, it is very difficult to secure universal notification, because, though the physician might be willing, the family very often objects, and it is hardly to be expected that the doctor will always disregard the expressed wish of his client. If it could be made to the interest of the physician to report all his contagious cases, a better result might be achieved; and such an effort, we understand, is being made in London, where a physician receives a half-crown fee for each case of notification of contagious disease.

Of course, we can see how this remuneration might induce some doctors to be *overly zealous* in reporting; but if an inspection by an impartial and competent medical official, and a confirmation of the correctness of the report, preceded the payment of the fee, we imagine that this possible abuse might be averted. Certainly such a system is worthy of trial, and, if guarded against abuse, would surely be productive of most beneficent results.

A Natural Method of Physical Culture.

WE are always heartily in sympathy with any system of physical culture that aims to accomplish results without the use of apparatus. Of course, *all* appliances are not to be condemned; but we, quite firmly, hold that they are unnecessary. A little volume on "Physical Training," by Edwin Checkley, has recently fallen into our hands, and we have been so very favorably impressed with its teachings that we can and do strongly commend its perusal to all the readers of THE ANNALS.

It is a very happy thought of Mr. Checkley's, and pre-eminently correct, when he holds that "a man or woman should get good health and sufficient strength and perfection of form in the ordinary activities of life, if those activities, however meager, are carried on in obedience to right laws." Mr. Checkley's instructions about "breathing" are particularly good. While we are not entirely in accord with the author's commendation of running, which we do not think a healthy or desirable form of exercise, with this one exception we can heartily recommend his book as containing about the safest, wisest, most physiological and most practical exposition of the subject of physical culture that we have yet encountered. The book is published by William C. Bryant & Co., of Brooklyn, N. Y.

Cardinal Gibbons on Walking.

"Some men are born great, some achieve greatness, and others have greatness thrust upon them;" so runs the old saying, so old that it is usually accepted as embodying the truth, yet, to the reflecting mind, very far from correctly stating that which is.

It is related of the late revered and distinguished Professor Gross, that when he was once asked if he had ever noticed a certain peculiarity of great men, he replied, in his deep and impressive voice, "I never saw a great man," which, by the way, would lead us to infer that Dr. Gross never gazed at a mirror. Be this as it may, it would seem that, while Dr. Gross was decidedly pessimistic in his views of greatness, the author of the saying with which we have commenced this editorial was one-third right and two-thirds wrong in his estimation of what constitutes greatness.

Rightly understood, greatness can be achieved only; one may be born in an exalted social, financial or mental atmosphere, but he is not thereby "born great;" one may, by the force of circumstances, become conspicuous or famous, he may be talked and written about, he may be gazed upon as he walks the streets, but this does not make him great. Barnum's white elephant was known throughout the world; the fame of the double negress, of the Siamese Twins, of "Laloo" the boy-girl, of Guiteau, of the man who attempted to kill Russell Sage, is world-wide; but none of these are great.

Greatness, as we understand the word, consists in the *accomplishment* of great or unusual feats. The man who, because of his achievements, is noted among his fellow-men, is, to our way of thinking, the great man; and the greater the accomplishment, as compared with the opportunities, the greater the man.

Let us paraphrase the old saying by assuming that while "some men are born *conspicuous*, some *achieve greatness*, and others have *notoriety* thrust upon them."

But what has this to do with Cardinal Gibbons and walking? It is the way leading up to the reflection that all great men and women believe in, and observe, the teachings of hygiene; they are not ascetics; they do not live by rule; far from it; but it is a fact that nearly all who have become noted among their fellow-men for exceptional accomplishments have been thoughtful of the conservation of their bodies.

Cardinal Gibbons, who was neither "born great" nor had greatness "thrust upon him," but who certainly has achieved it, was the subject recently of an article in the *New York World*, wherein his habits as a pedestrian were set forth in glowing terms.

To ascertain the reliability of this report, we wrote to the Cardinal, asking for a verification or denial of the report, and in reply his Eminence says: "My afternoon walk varies from two to four miles, and rarely exceeds the latter figure. I also take a brief walk in the morning, for about a half-hour. I find these walks very beneficial to my health."

Now, if Cardinal Gibbons, with all his multifarious duties, can find time for daily walks, does it not seem ridiculous for the average individual to plead "no time" as an excuse for neglecting a practice that is, of all others, most necessary to the maintenance of a healthy state of the body?

If we could persuade every person who sees this journal to make a firm and solemn resolution, and to *adhere thereto*, that he would hereafter, rain or shine, hot or cold, walk five miles per day, we would feel that we had accomplished a task that would entitle us to a place among those individuals whom we would esteem as great. We would ask for no further epitaph than to have it truthfully engraved on our editorial tombstone:

Here lies the body of the man who succeeded in persuading his fellow-creatures to walk five miles every day.

The Sanitary Exhibit at the World's Fair.

One of the most striking evidences of the giant strides of preventive medicine during the last few years is to be found in the fact that while at the Centennial Exposition, in 1876, no one even thought of a sanitary exhibit, the Columbian World's Fair, of 1893, will have a display relating to this all-vital subject that will fully parallel in interest any other display that will be made. We may be pardoned, possibly, for the natural pride we feel in the fact that the initiative in this proposed display has been taken by Pennsylvania.

Governor Pattison (who, by the way, is deeply interested in hygiene, giving thereby additional evidence of his possession, in an unusual degree, of that rather rare commodity, "common sense"), having made known to Dr. Lee, the Secretary of the State Board of Health, that he was desirous of having the sanitary work of Pennsylvania represented at the Fair, this latter official summoned a conference of State Boards of Health officials, which met at Chicago on the 14th of January.

The result of this conference, which was largely attended, was the appointment of a committee consisting of Dr. Benjamin Lee, Secretary State Board of Health of Pennsylvania, Chairman; Dr. H. B. Baker, Secretary of Michigan State Board of Health; Dr. Franklin Staples, President of Minnesota State Board of

Health; Dr. J. T. Reeve, Secretary Wisconsin State Board of Health; Dr. J. D. Kennedy, Secretary Iowa State Board of Health; Dr. F. W. Reilly, Secretary Illinois State Board of Health; Dr. C. N. Metcalf, Secretary Indiana State Board of Health; Dr. Wm. H. Ford, President Board of Health, city of Philadelphia; Dr. O. W. Wingate, Health Commissioner of the city of Milwaukee; and Dr. J. D. Ware, Health Commissioner of the city of Chicago.

It was the opinion of the conference that there should be a *collective exhibit* of the work of State and Municipal Boards of Health, and this committee will formulate the best methods of carrying this idea into effect. We doubt not that this committee would welcome suggestions from any one who is interested in the subject.

Man-Afraid-of-the-Air.

We are not writing of some famous Indian chief, but of the twisted and vitiated and generally distorted (physiologically speaking) specimen of humanity who hugs the stove when the thermometer gets down to 30°, and for whom every particle of fresh air seems to have a fateful significance, not fate-full of health and pleasure and joy, but of dire disaster.

It is one of the penalties of artificial modes of life that so many of us should be influenced unfavorably by the action of cold air. Man, in a state of nature, is not sensitive to changes of temperature; it matters but little to him if the thermometer registers 90° or 30°; he has within his physiological system a furnace that works automatically, burning brighter when the surrounding atmosphere is cold and banking its fires in warm weather. This human furnace, working with thermostatic precision, maintains the body always at an equable temperature.

It is, we believe, a law of evolution that, when a part or an organ of any organized body is no longer requisite to the functionation of such body, it gradually, as the result of disuse, disappears.

The human furnace is no exception to this rule. In these days of artificially-heated buildings there is but little demand made upon the heat resources of the body itself; the greater part of the lives of the majority of human beings is passed within doors, in houses, rooms or halls, in which, owing to the presence of artificial heat, the demand upon the heat-making function of the body is reduced to the minimum. By this very enforced inactivity the human furnace gradually loses more and yet more of its ability to generate heat; not being exercised, it loses the power of acting, just as will, in time, the muscle that is maintained in a position of quiesence.

Is it not, therefore, easy to be understood why the average individual is so susceptible to the evil influences of cold air? From an artificially-heated room he goes suddenly into an atmosphere maybe 40° or 50° colder; it is true he puts on an extra coat; but this does not make more heat; it only serves to help to keep within the body, by interfering with its radiation, the heat that the vital furnace is generating therein; but this furnace is not now generating heat enough to bring the bodily temperature up to the point where it has been but a moment before in the heated room. The cold blast robs the body of its heat, and the heat-generating function, weakened by disease, is not equal to the task of supplying the amount of heat necessary to resist the action of the cold, to maintain the healthy equilibrium, and we "catch cold," or rather the "cold catches us." It would really better express the condition of affairs did we say rather than "I have caught cold," "the cold has caught me;" for, when one "catches" anything, he is usually supposed to have control of it; it is a something that he has been pursuing, conscious of his ability to master it, and, when caught, it is usually subdued, be it a refractory child or a runaway horse; but, unquestionably, we do not subdue, but are rather conquered by the cold, hence would it be better to modify the popular phrase as we suggest. Of course, we would not be understood as advocating the abolition of all artificial methods of heating our buildings. "Cranky," as sanitarians are usually supposed to be, we have not yet reached that degree of assininity; but we would recommend and strongly urge an intelligent and sensible utilization of artificial heat as a means not only toward the acquisition of comfort, but as a potent factor in the prevention of disease.

If we persist in heating our bodies by artificial means, nature will decline to do so by natural means. The man-who-is-afraid-of-the-air is the man who loves a stove; he is the man who, because he accustoms himself to an excessive artificial temperature indoors, is not able to withstand the slightest exposure to cold. Now, do not, we implore you, actuated by this editorial, rush to the other extreme, and then heap maledictions upon our head for the evil results; do not suddenly expose yourself to the coldest weather without a gradual acclimatization thereto.

Get a thermometer and see that the temperature of your living apartment is not above 70°; if, with this temperature, you feel chilly, do not supply the extra warmth by piling coal on the stove and sitting close thereto; rather encourage your vital furnace to increased activity; turn on the draft by exercise, by motion; move about and excite increased warmth by some of the exercises which we depicted in our last issue. Get all the heat you can out of your physiological furnace, and let the iron stove make up the deficiency rather than the reverse, which is the case with man-afraid-of-the-air, about whom we have been writing.

Elevator Sickness.

With delicate persons the stoppage of the elevator car brings dizziness to the head, and sometimes nausea to the stomach. The internal organs seem to rise into the throat. All this comes from the fact that all parts of the body are not stopped at the same moment of time. The feet being next to the car floor, stop with the car, while the other portions of the body continue moving. If the body as a whole can be arrested at the same time as the feet, there will be no sickness. This can be done by placing the head and shoulders against the car frame. It is a sure preventive, according to the *Scientific American*.

NOTES AND COMMENTS.

To Remove Rust From Iron.

Scour with a mixture of one part each of cyanide of potassium and soft soap and two parts whitening, made into a paste with a little water; then wipe off carefully and apply oil to prevent further action.

New Health Department in London.

The act of Parliament establishing a Public Health Department for the city of London went into force the first of the year. This is the first time that a city has had a department attending solely to matters of health.

Treatment of Sweating Hands.

The *Journal de Medicine* gives the following:

℞	Tinct. of belladonna	ʒj.
	Cologne water	℥j.

M. Add a little glycerine at the moment of using, and, with the mixture, rub the hands strongly. The hands should first be washed in soft water and thoroughly dried.

For Tender Feet.

A pneumatic inner sole or sock for boots and shoes has been brought out to confer great benefits upon people who have tender feet, etc. It is made of hollow india-rubber, inflated with air or gas under pressure, the external protective covering being canvas, linen, skin, or other suitable material to adapt it to withstand the internal pressure of the compressed air or gas.

Outing.

This well-known magazine will offer many new attractions for the coming year, while retaining all the features that have given it such popularity on both sides of the Atlantic. Such well-known writers as John Habberton, Mrs. Ward, Edgar Faucett, Wenona Gilman, Ernest Ingersoll, Ed. W. Sandys, Malcolm W. Ford, Walter Camp and others of like literary fame, will contribute valuable and interesting articles that will be of such a character as to bring to *Outing* a very large circle of new readers.

Trevelyan writes of the "American Turf," in a series of articles, each complete in itself. Wenona Gilman's novel, "Saddle and Sentiment," will be read with genuine pleasure by lovers "of the sport of kings," says the *Spirit of the Times*. Every branch of sport and pastime will, in its season, be treated in richly illustrated articles. Those interested in hunting, fishing, cycling, riding, yachting and running, will be kept posted by the Monthly Record Department.

Opposed to Low-necked Dresses.

The mayor of Barfleur, in France, has forbidden the wearing of *décolleté* dresses by the women of the commune, on the ground that such costume is prejudicial to peace and social morality.

Coffee and Cholera.

It is some time since a Dutch physiologist announced it as his discovery that coffee is a germicide—a sure killer of the cholera bacillus in a few hours. It is now reported from North Bhangulpur, in Bengal, that the coffee remedy for cholera is being put into practice there with astonishing success.—*Western Druggist.*

Chestnut Pudding.

Try a hot chestnut pudding. You will never get hold of anything more delicate: Boil two pounds of chestnuts till soft (two hours or more), dry them in the oven, remove the shell and skin, then pound the chestnuts. Mix with them two ounces of butter, two ounces of caster sugar, two or three eggs and a half pint of milk, and flavor with a little vanilla. Bake for two hours and a half.

A Scientist's Ruling Passion.

According to the *Medical Record*, Dr. Richet, whose death occurred recently, made careful observations on his subjective symptoms, detailing them to his son and attending physician, in order that they might write them down. Each new sensation was minutely described, and even at the very end, when those about observed unmistakable signs of speedy dissolution, he surprised them all by saying, " You see I am dying."

Pure Drinking-water on Shipboard.

The Lancet says that attention has lately been directed to the impurity of much of the water used on board ships at sea, and the consequent prevalence among sailors of such characteristic diseases as dysentery, typhoid fever and cholera, and adds that there is reason to believe that the grievance is no imaginary one, and that certainly its importance cannot be overestimated. It urges the necessity of a careful examination of the condition and contents of all water-tanks and barrels being made before the ship starts on a voyage, and goes on to say: " A supply of such purifying agents as alum and charcoal should not be omitted, since by means of these, by boiling and by distillation, faulty water, if no better be procurable, may often be made drinkable. Better still, and much more convenient in use, would be one or more ship's filters of large size. The scandal of disease arising on shipboard from a cause so easily preventable demands, at least, the adoption of these necessary preventive measures."—*Med. Record.*

Oyster Croquettes.

Put two dozen oysters on to boil in their own liquor. Let come to a boil. Take from the fire, drain and chop. Put half a pint of the liquor in a saucepan, with a teacup of cream, thicken with a tablespoonful of flour and butter each, rubbed together. Stir until the milk boils, add the oysters, the yolks of three eggs, and stir one minute; take from the fire, and season with a tablespoonful of chopped parsley, a half of a grated nutmeg, a little salt and cayenne pepper. Mix well and turn out to cool. When cold, form into croquettes, roll in beaten egg, then in bread crumbs, and fry in boiling lard.

The Plague in London.

Among the items of interest in a volume on the "Population and Growth of the City of London," recently issued by the London Corporation, are extracts from the bills of mortality which were first published by the Ancient Company of Parish Clerkes in 1592. From these some idea of the awful ravages of the plague may be gathered. In 1603, 30,561 persons died of it in 147 parishes of London, Westminster and Southwark; in 1625, 35,417 persons; and in 1665, the year of the "Great Plague," 68,596; the population of London then, as ascertained by the rough-and-ready method at that time adopted, being well within half a million.—*British Medical Journal.*

How Jewish Meat is Killed.

One of the largest abbatoirs in the city, covering an ample block, owned and operated by men of Jewish race and faith, is remarkable for its smooth and effective working and admirable distribution of parts. An average of 800 cattle, between three and five years old, pass through it in each of the business days of the year. Arriving from the West at the river-front, they ascend one by one to the fateful inclosure, where an adept employee fastens a chain around the hind leg of each. Hoisted by machinery, the bovine falls gently upon one shoulder, and in most instances without a cry. Occasionally, however, some brute, maddened by sight and smell of blood, breaks out into the slaughter-house and creates disturbance that is speedily quelled by its own dispatch. Submissive companions, with neck twisted to expose the throat, quickly feel the shochet's long and shining knife. The shochet himself is a stalwart fellow, cool and wary withal, who rarely makes a useless motion. He is a religious man and of good moral character, as his license from Rabbi Jacob Joseph, chief of certain orthodox congregations in the metropolis, avouches. The lifestream in torrents follows the movement of his blade. This is "shechita," the killing. It insures complete effusion of blood, in which may be germs of disease that otherwise might find entrance into human bodies. Next follows "bediqah," the examination of instrument and victim. If a nick appear on the keen edge of the knife, that by extremists is held to imply unnecessary suffering, injurious chemical change and consequent unfitness of the carcass for market. If there be none, lungs, liver and heart, the entire body, indeed, are minutely inspected. *—From " The Jews in New York," in the February Century.*

Hurry and Worry Kill Men.

"It was heart failure," say the doctors, and they say it so often that we put on our thinking caps. And business man after business man falls out of sight, and when we ask what the trouble was the reply is pretty sure to be, "Heart failure!" A great deal of worry, a habit of constant hurry, keeping a high tension year after year—that's what's the matter. We sleep with one eye open, talk business in our dreams, swallow a whole meal—soup, entrees, roast and dessert—with one gulp, and then when we hover above the fifties the heart gets disgusted at its treatment and closes up the concern.—*N. Y. Herald.*

On Taking Fluid with Meals.

A great deal of misapprehension is often found to exist in the popular mind in regard to matters of eating and drinking; the cause of this, to some extent, is to be traced to old-time sayings which have come down to us in the form of a concentrated infusion of somebody's opinion upon a subject of which he or she was wofully ignorant. One of these misapprehensions to which we may refer is as to the injuriousness of taking fluid with meals. One frequently hears it laid down as a maxim that "it is bad to drink with your meals, it dilutes the gastric juice." By way of explanation, we may remark that "it implies that the fluid taken is harmful." Whence this sagacious postulate originally came we cannot tell; it has quite the ring about it of an inconsequent deduction formed by a person whose presumption of knowledge was only exceeded by a lamentable ignorance of the subject. Medical men often find much difficulty in dealing with these museum specimens of antiquated science, for even educated persons are disposed to cling to the absurdities of their youth. Upon this matter, Mr. Hutchison's remarks in the last number of his *Archives:* "I observe with pleasure that the verdict of general experience and common sense has been confirmed by scientific experiment in the matter of taking fluid with meals. Dr. Tev. O. Stratievsky, of St. Petersburg, after elaborate trials, has found that fluids materially assist the assimilation of proteids, and announces the following conclusion, which is to be hoped no future experiments will controvert. On the whole, the widely-spread custom of taking fluids during or just before one's meals proves to be rational and fully justified on strict scientific grounds. To take fluids with the meals is almost as important an adjunct to digestion as is the mastication of solid food preparatory to swallowing it." It is obvious, however, that there is a limit to the amount of fluid one can swallow with impunity—not to speak of comfort—just as much with meals as at other times. It would be dangerous to create a general impression that fluid is good with food, irrespective of quantity. It is, moreover, a well-ascertained, clinical fact, that an excess of cumprandial fluid does retard digestion in certain people, and gives rise to discomfort in most. A little attention to one's sensations in such matters will far better fix the desirable limit than all the "data" in the world. —*Medical Press.*

The Chinese Bone-setter.

A Western paper thus describes the method of treating a fracture employed by a Chinese doctor in that part of the country: "In setting a fractured limb he makes no effort to bring the bone in apposition, but simply takes a lot of red clay and envelops the limb with it. Then he takes some strips of bamboo and inserts them into the clay. Bandages are wrapped around those strips, and in the outer bandage he places the head of a live chicken. After he has secured this bandage he cuts the head off the fowl, allowing the blood to flow and penetrate the fracture. He then takes the chicken's head from beneath the bandage and covers the exterior with a thick coating of glue. The reason for applying the chicken's head is that it nourishes the broken or fractured limb, and is "heap good medicine."

Sterility of Fat People.

Dr. Kisch, in *Le Bul. Med.*, says: Obesity is an obstacle to fecundation in all animals; and this law obtains also in the vegetable kingdom. Hippocrates enrolled this among his aphorisms. As proof, he cited the frequent sterility of the Scythian women, often fat, in comparison with the fecundity of their slaves, who were wont to become pregnant upon the least provocation. Without seeking for demonstrative instances in Eastern countries, he has ascertained that, while sterility exists on an average in one household in ten, or at least in more than one in eight—six among the aristocracy—this proportion is increased to one in five when the wife or both parties are fat; if we reckon families which have only one child, in such cases there will be found a proportion of one to four.

Hygienic Treatment of Obesity.

Cheron (*L' Union Méd.*) gives the experiments by different operators which go to prove that the fat of the organism is derived from the fat, the albuminoids and the hydrocarbons of the food. He details at length the regimen of numerous authors. The Banting treatment which, as is well known, consists in an increase of the albuminoids with decrease of fat and hydrocarbons, with as little liquid as possible, is considered efficient, but very debilitating, and is compared with what the author designates as the physiological treatment of G. Sée, which consists of four ounces of nitrogenous foods with nine to eleven ounces of lean meat and albuminoids, three to six ounces of neutral fats, ten ounces of hydrocarbons and ten ounces of sugar. Liquids are increased, but alcoholics, especially beer, are forbidden, and their place is taken by coffee and tea. He recognizes as equally important with the food, exercise. A gymnastic exercise, especially recommended for those with pendulous abdomens, is to stand with the back straight against a wall, at the same time the arms are raised to the side of the head, describing a semicircle upward and backward. He considers this more efficient than walking.

In the anæmic obese, he advises great caution as to the amount of exercise allowed. It is necessary to accelerate the assimilation of the food. This is done by cold baths, frictions and salines. The medical treatment consists of purgatives and alkalines. Small doses of iodide of potassium are very useful.

He finally divides the obese into two classes—the vigorous and the feeble. The former are treated vigorously, and the latter more carefully. When the patient is past forty years, has a degenerated heart, or is anæmic, the vigorous cure has an enfeebling effect on the central circulating organs, which is the chief source of danger.

Hotel-keepers Must Sell Pure Milk.

By a recent decision of the Supreme Court of Massachusetts, the selling of impure milk by hotel-keepers is punishable under the same statute which applies to milk dealers in general.

Perfumery in "Hay Fever."

At this season of the year there are many persons who are sorely afflicted with hay fever. Such persons naturally wish to avoid anything and everything which may have a prejudicial effect upon them, for, at its best, life is at a discount during "sneezing time." Being a sufferer myself, I know whereof I speak. Now for the point I wish to make: Perfumery used on the handkerchief is about as good a sneeze-producer as can be found. It surpasses ragweed, golden rod and everything else I know of. The only advantage it has is its pleasant odor, but that doesn't compensate for the twenty or thirty sneezes it induces. Beware of perfumery, if you have hay fever, till your nose shall have ceased to respond so energetically to excitants of various sorts.—*Dr. J. W. Stickler, in Med. Record.*

The Brain Jar of the Military Step.

Dr. Colin, regimental physician in the French army, has published the results of his investigations into the effects of regular marching in disciplined bodies upon soldiers. The regularity of the step causes the indefinite repetition of a shock of the bones and brain, infinitely more deleterious than an irregular walk, and to this regular repetition of the shock to the same parts of the body is due the peculiar aches, pains and illnesses of the troops. In a one-day march, he says, this shock is repeated 40,000 times, and often the strongest men, who can walk the same distance without difficulty when not in line, succumb to the strain in two or three days. Dr. Colin's preventive is a rubber heel in all military boots. This heel has been tried at his instance in the French infantry, he says, and the result has been found to be a great relief to the soldiers. The experiments with the rubber heel are still in progress.—*Med. Record.*

SPECIAL REPORTS.

State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania.

PRESIDENT,
J. H. McCLELLAND, M.D., of Pittsburg.

SECRETARY,
BENJAMIN LEE, M.D., of Philadelphia.

Pemberton Dudley, M.D., of Philadelphia.
J. F. Edwards, M.D., of Philadelphia.
J. H. McClelland, M.D., of Pittsburg.
Howard Murphy, C.E., of Philadelphia.
George G. Groff, M.D., of Lewisburg.
S. T. Davis, M.D., of Lancaster.
Benjamin Lee, M.D., of Philadelphia.

PLACE OF MEETING,
Supreme Court Room, State Capitol, Harrisburg, unless otherwise ordered.

TIME OF MEETING,
Second Thursday in May, July and November.

The New Department of Hygiene of the University of Pennsylvania.

It is, unfortunately for the welfare of humanity, not very often that the heart of the sanitarian is gladdened, as was ours, by the sight presented in the Library of the University of Pennsylvania on the 22d of last month.

Truly, it would be difficult to gather together, on any occasion, such an exceptionally desirable audience as was there present to participate in the ceremonies incident to the opening of the new "Department of Hygiene" of the University of Pennsylvania. Men learned in medicine, law, divinity were there, and it was to be expected that they would be; but we were hardly prepared for the congregation of fashionable ladies that constituted such a large proportion of the audience. Truly, may we say, that, from this time on, hygiene will be "fashionable" in Philadelphia. Originally suggested by the editor of this journal, this Department of Hygiene is the outcome of the progressive, untiring, intelligently-directed efforts of the Provost of the University, Dr. Wm. Pepper, and of the practical appreciation of the vital importance of the subject on the part of some of Philadelphia's best citizens, notably Mr. Henry C. Lea, to the extent of $50,000, and the late Mr. Henry C. Gibson, who donated $25,000 thereto.

It must be understood that this new departure is not in the shape of a bacteriological laboratory; for while it is this, it is also much more, for it is proposed not only to carry on investigations relating to the microscopic causes of disease, but the whole domain of hygiene; everything tending toward the preservation of health and the prevention of disease will be the subject of investigation.

The building is in itself an object-lesson in the science taught in it, having been fitted with a view to practically testing every promising device in heating, lighting, ventilation and drainage. It is substantially built of brick and brown sandstone, being 113 feet by 91 in dimensions, and has been constructed under the constant supervision and is the result of the personal experience of both Dr. John S. Billings, of the United States Surgeon-General's office, Washington, who has charge of the new department, and his assistant, Dr. Alexander C. Abbott, lately of Johns Hopkins University, in the laboratories abroad, and it is doubtful whether even the German laboratories themselves will surpass the plant of this school.

Everything is made subservient to the practical end of the institute. For example, the pipes throughout have been brought several inches outside the walls, and each painted a distinctive color, a maroon pipe signifying a steam pipe, a red denotes hot water, white is for gas, blue indicates cold water, and yellow stands for drainage.

The objective point of this system is that each may be readily traced in all its ramifications and tested easily at any point from boiler to steam coil or from sewer connection to the roof. Indeed, there is scarcely a yard of any sort of pipe in the building which cannot be easily reached, so that practical plumbing may be studied as easily and as closely as any other branch of engineering. In addition will be found every sort of trap or other device in the market that is practicable, and each new one invented will be given a fair trial on its merits for efficiency and economy. This principle will be observed in all the departments.

In the large laboratory on the first floor there are seven steam radiators, all of different makes, and so arranged that each may be used and tested separately, and any one may be removed and another substituted. The settings of all these radiators, except in the hallways, are novel and very interesting. They are placed immediately under the windows, and each is inclosed in its own box and has its independent supply of cold air through well-regulated openings in the outer wall. The idea is to keep out the dust, and render the air admitted very nearly pure, and the currents will be directed upward along the walls, avoiding direct draughts upon the occupants of the room. The radiators are thus made to play an important part in the ventilation, which is expected to be as near perfection as modern science can make it. So each of the many systems with their virtues, when used under proper conditions, will all be thoroughly tried in the new school. The main lecture-room is so fitted that a practical demonstration of two of the most approved methods, known as the "aspiration" and "propulsion" methods, respectively, may be made in the presence of a class. The aspiration method consists of a set of "Tobin's tubes," large wooden channels, which take warm air from the outside and deliver it at the ceiling, when it passes out of the room through a heated flue. By the "propulsive" system the air is propelled into the rooms by means of a revolving fan, and is discharged similarly to the other method. The flue extends from the cellar to the roof, and is fitted with steam coils for increasing the force of the draught.

Such, briefly described, is the new department, the inauguration of which was so auspiciously attended. Dr. S. Weir Mitchell, in a most eloquent, appropriate and happy address, presented the building, on behalf of Mr. Henry C. Lea, to the trustees.

"I am here to represent my friend, Henry Charles Lea (said Dr. Mitchell), that I may make over to the trustees the completed laboratory which he has built for the teaching and study of hygiene.

"This, my very pleasant task, shall be brief. I am about, Mr. Provost, to give you another man's gift. For the moment I am the owner. A faint, a subtle sense of the joy of being able, aye, more, of being willing, to give on a scale so royal comes to me as I think of what I am about to do. I realize the honest joy such bounty brings to him who gives. I assure you that it fills me with an ardent, a philanthropic desire that more of you should share the delight of liberal giving to this ancient school of learning.

"As a physician I am strongly moved to use this rare opportunity to preach a brief medical sermon. My text is taken from the first chapter and the first verse of a late writer on hygiene: 'Hygiene aims to make growth more perfect, life more vigorous, decay less rapid, death more remote.'

"To this rather material statement I would add another. The highest usefulness in life is only possible with the highest standard of health. I no longer wonder that the ancients worshiped health, the fair goddess Hygeia. Be pleased to observe that this was a feminine deity, a goddess of health. The fact is not without meaning. So great is my reverence for supreme wholesomeness that I should almost be tempted to assert that perfect health is virtue. At least, as a physician, I like to say that in my opinion, and for men in general, health, the best health, is essential to the attainment of that efficiency which makes duties easy and resistance to temptation a normal result.

MORAL INFLUENCE OF HYGIENE.

"Speaking of the higher, the spiritual development of man's faculties, a famous divine has said: 'Yes, it is a good thing to be born again, but he who wins this new birth will be better born again for having first been well born.' The truth, the largely applicative truth of this epigram, comes home to every physician who has seen how much of the usefulness of the good and the productiveness of the intellectual is crippled or lost because of physical failures due to follies in education or to impairments growing out of preventable maladies.

"I have a fixed belief that a population below the normal level of health is sure to be also below the normal of goodness; I am as firm a disbeliever in the utility of long-disordered health to make men better. You remember what Becky Sharpe said of goodness: 'I should have been a good woman had I had £5,000 a year.' Trust me, a large income of health means for the many capacity to live at their moral best for themselves and for their fellows. Poverty of blood, like poverty of pocket, has its temptations.

"Others to-day will tell you how the ill-health which comes to masses of men in epidemics affects the economic prosperity of the community—how vast is its influence, how untraceably far-reaching. I have chosen, rather, to hint at the ill results as to morals which may arise from lowered health, owing to the poverty it entails, the direct and indirect temptations it creates, the self-indulgence it fosters in a variety of forms. It were easy to point this moral with many a sad tale. The story of every great epidemic—the plague, the cholera, yellow fever—is dark with histories of human baseness. But there are, in our vast cities, influences more or less capable of remedy, which cause no death and put none at once to bed, and which, nevertheless, entail on communities lowered conditions of health, affect the enterprise and spirits of men, and morally and mentally depress, so as in subtle ways to cause degradation, desire for alcohol and degenerative changes.

"Apprehending the value of the many ways thus open to beneficent knowledge, Mr. Lea proposed to us to create a School of Hygiene, in which not only should we teach the art to live, but where also the new and effective helpmate of hygiene—bacteriology—should be provided with means of developmental research. It became clear, somewhat later, that we could hope before long to place in directive charge of the whole work the one man best fitted for it in America,—Surgeon-General John S. Billings, of the army. The well-known modesty of my friend forbids me to say too much of him. The fact that he was to be at its head induced Mr. Lea to increase his gift for a building to $50,000. On hearing of this, the late Henry C. Gibson at once offered $25,000 as means for equipment.

"I pause to render my tribute of thankful praise to the memory of this kindly, gentle and most generous man. He had the art of giving with such courteous simplicity as made those who sought his bounty feel that he was the one obliged. To no other man was this great school so deeply in debt for repetitions of large gifts."

Dr. Mitchell read a letter from Mr. Lea, who had modestly declined to make the formal presentation of his noble gift, in which was clearly set forth the importance of scientific hygiene. "It is not visionary," said Mr. Lea, "to say that we are on the threshold of discoveries which promise, if rightly used, to relieve humanity from some of the distressing evils which have weighed it down in the past. To this most desirable consummation the University of Pennsylvania makes a notable contribution in rendering the study of hygiene compulsory on all who seek its degrees in medicine, architecture and civil engineering, and in organizing a department of hygiene where scientific investigation and instruction can be conducted under the most favorable conditions."

Dr. Mitchell, after stating that the endowment now reaches $213,000, and that at least $75,000 more are needed, transferred to the Provost and Trustees, in the name of Mr. Lea, "the admirable building he has erected."

Provost Pepper, in responding, said: "Right gladly do I, on behalf of the University, accept from you, as representing Mr. Henry Charles Lea, and our dear friend, the late Henry C. Gibson, and their generous colleagues, this noble gift. Never has the circle of our University departments opened to receive a more welcome addition."

Dr. Benjamin Lee, Secretary of the State Board of Health, spoke of the necessities of scientific sanitation (see page 149).

The Director of the Institute, Dr. John S. Billings, in an address of great interest, described its objects, methods and needs.

The closing address was by Dr. H. P. Walcott, President of the Massachusetts State Board of Health, who presented a most instructive review of the work of that efficient body and of its valuable results.

Minutes of a Special Meeting of the State Board of Health of Pennsylvania, held February 22, 1892.

A SPECIAL meeting of the State Board of Health was held at the executive office, 1532 Pine Street, Philadelphia, on February 22, 1892, at 2 P.M.

Present: Drs. Dudley, Groff, Edwards and Lee, and Mr. Murphy by proxy. The Secretary stated that Mr. Murphy had been called to Shenandoah, Schuylkill County, at the request of the Shenandoah School Board, to examine a school building rendered unsafe by undermining in a coal shaft.

In the absence of the President, Dr. Groff was called to the chair. On motion, the reading of the minutes was dispensed with.

The Secretary presented the report of the Committee on a Sanitary Convention. This report proposed a change in the Convention from the last week in February to the last week in March. It also contained a preliminary announcement of the Convention for publication and distribution. The report was accepted and the proposals which it contained adopted.

Presentation of accounts being the next business in order, the Secretary presented vouchers Nos. 487 to 409 inclusive, including $999.63.

The Secretary then moved that when the Board adjourns it adjourn to attend the opening exercises of the Laboratory of Hygiene of the University of Pennsylvania. It was carried. On motion the Board then adjourned.

(Signed), BENJAMIN LEE,
Secretary.

State Board of Health of Pennsylvania.—The Seventh Annual Report of the Secretary, Benjamin Lee, M.D.*

(Continued from page 623, issue of December, 1891.)

PROTECTION OF WATER SUPPLIES.

THE efforts of the Secretary and of the Committee were first in the direction indicated by the Governor, namely, to procure legislation for the protection of the purity of streams and other inland waters, more particularly of such as are, or are likely to become, the sources of water supplies for cities and towns. In this attempt, they had the support of the water companies and water commissioners of the western part of the State, who met in convention, in Pittsburg, and adopted resolutions in favor of such an enactment, and were aided by the public press of that city. They also sent a delegation to Harrisburg to meet the Board and unite with it in a personal appeal to the Legislature.

The Committee on Public Health and Sanitation of both branches of the Legislature became strongly impressed with the necessity for this step, and that of the House of Representatives extended to the Board the courtesy of the use of the hall of the House on the evening of March 5, 1891, and invited the entire legislative body to hear the arguments of the friends of the measure. The attendance was large, and the impression made was evidently favorable. The meeting was presided over by the Hon. Henry F. Walton, of Philadelphia, a member of the House Committee on Public Health and Sanitation. Addresses were made by members of the Board, medical inspectors, water analysts and representatives of water companies, presenting the subject from every point of view in a forcible manner, and letters were read from municipal corporations showing the necessity for protection of the streams from which their people were drinking. If a vote could have been taken at the conclusion of the meeting, it would have resulted in favor of the desired action by a large majority.

The dread, however, of interfering with the manufacturing interests of the State finally prevailed in the minds of the legislators, and the bill was defeated.

Two bills pertaining to this subject, however, passed, both of the nature of special legislation. One of these, exemplifying the curious fact pointed out by your Secretary in his last annual report that the Legislature is willing to extend protection to the water supply of Philadelphia which it denies to that of other cities, forbids the establishment of cemeteries on lands located within one mile of any city of the first class, the drainage from which empties or passes into any stream from which any portion of the water supply of such city is taken.

The other is an act to prevent the pollution of springs, water wells and streams by water escaping from abandoned oil wells and gas wells. This also is of extremely limited application.

POLLUTION OF THE WATER SUPPLY OF A NEIGHBORING STATE.

The necessity for a general statutory law of this kind has been emphasized since the adjournment of the Legislature by the receipt of a remonstrance from the State Board of Health of Delaware, by the Secretary, to the effect that the Brandywine River, which is the source of water supply for the city of Wilmington, with its population of 60,000 souls, was receiving pollution of a very serious character about eight miles from the intake of the city water works at a point within the boundaries of Pennsylvania. While Delaware has herself an excellent law to prevent the pollution of her streams, she is powerless to protect her citizens because the great and progressive State of Pennsylvania is without such a law. The Board at once interfered in this case, and caused the abatement of the nuisance; but the incident suffices to show that the question is one of wider import than a mere State issue. The Board, therefore, having labored in vain with the successive legislatures, and finding itself no nearer the goal of success than when it began, has appointed a committee to consider the expediency of applying to Congress for the enactment of

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* Presented to the Board at the meeting held in Harrisburg, November 12 and 13, 1891.

A NATIONAL LAW TO PREVENT THE POLLUTION OF STREAMS PASSING FROM ONE STATE TO ANOTHER.

The National Conference of State Boards of Health, which meets next summer in Detroit, will lend its powerful influence in the same direction. It is, therefore, quite within the limits of probability that before the State Legislature has another opportunity to vindicate its intelligence in this regard, Congress will have passed a law which will, for certain of its waters at least, render its action unnecessary.

PURIFICATION OF SEWAGE.

In this connection, the Secretary would call attention to the fact that new methods of purification of sewage are at present on trial at two points in the State—that of the Devon Inn, Chester County, and of the village of Wayne, Delaware County. Up to the present time the Board has not been able to pronounce either of them satisfactory. The issue of the report of the State Board of Health of Massachusetts on "Filtration of Sewage and of Water and Chemical Precipitation of Sewage," constituting a volume of 900 pages, marks a new era in the discussion of this question. It is based on experiments on a large scale at the Board's Experiment Station, at the city of Lawrence, and on analyses and microscopic examinations made at the Board's chemical and biological laboratories. These observations have been actively carried on since the year 1887, and have been conducted at an expense of $107,076.16. To attempt to give the slightest idea of their scope and completeness in this report would be out of the question. Suffice it to say that they point to the solution of this troublesome problem in the adoption of a system of intermittent filtration through filter-beds so constructed that the air shall have free access to the fluid as it passes through them, and that success depends on the ability to cultivate the bacteria of nitrification in the filters; so that the fact to which so much prominence has been given, that germs or bacteria had been discovered in large numbers in the filtering medium of many household filters, does not condemn the latter unless it can be shown that these bacteria are those of disease.

The other measure of reform which the Board urged upon the attention of the Assembly was

THE ESTABLISHMENT OF LOCAL BOARDS OF HEALTH THROUGHOUT THE STATE IN CITIES, BOROUGHS AND TOWNSHIPS.

This is not only demanded most urgently in the interests of health, but is an essential preliminary to the inauguration of any complete system of registration and vital statistics. It is a fact, of which a citizen of Pennsylvania can scarcely feel proud, that a man may die and be put under the ground anywhere outside of the largest cities, and it shall be less a matter of record than if he were a stallion or a bull with a pedigree. Can we wonder that graveyard insurance flourishes on such a soil? To show how this carelessness in burial impresses the ordinary mind, allow me to call your attention to the following extracts from a letter by the wife of a journeyman carpenter, who had applied to the State Board of Health for information with regard to the place and date of birth of a deceased person:

"PHILADELPHIA, *February 9, 1891.*

"BENJAMIN LEE, M.D.

"*Dear Sir:* Your letter of 9th instant before me. The statement you present me with, regarding the State Bureau of Vital Statistics, is so strange and astounding that I can scarcely realize such a condition of affairs in a large and thickly-populated State like Pennsylvania. It is, in my opinion, a sad disgrace to the State. And even our large and beautiful city, I am informed, has no records of births or marriages prior to July, 1860. Is it not a deplorable condition for a city and State like ours? It is high time our city and State authorities should awaken to home interests and dust the cobwebs from their eyes and drive the lethargy from their brains. If some of the funds spent to entertain and amuse titled foreigners were appropriated for such useful and necessary bodies as the Board of Health and Board of Vital Statistics, our fair State and city would not be the laughing-stock and butt of every little town and country village outside of the State. But pardon me, I am entirely forgetting myself, and I beg you will excuse my astonishment at such a vile state of affairs, which is the only excuse I can offer for my tiresome letter. If possible to obtain me the information I request I shall be very much obliged, indeed. More, were I of the moneyed class, I would willingly pay for the trouble, but I am not, as my husband is a working carpenter and in poor health—*i. e.*, heart disease and rheumatism from the army.

"Respectfully."

The original bill for this object, meeting with serious opposition, was modified in various ways in order to meet the view of objectors, but concessions were of no avail, and the measure failed.

Your Secretary is not willing to adopt the sentiment, expressed by so many of the opponents of this bill in the Legislature, that the citizens of Pennsylvania, living outside of the large towns, are so far inferior in intelligence and civilization to those of other States as to be incapable of self-government in this important particular, and he trusts that you will share in his reluctance. With your approval, he proposes to importune the Legislature at each successive session until he convinces it of the error of this belief and obtains the desired enactment.

The act and joint resolution passed with reference to the immense expenditures incurred in abating the colossal nuisance at Johnstown are of deep interest to the Board—first, as justifying the action of your Secretary in immediately assuming control in the name of the Board in the devastated regions; secondly, in legalizing the action of the Governor in resorting to extra-constitutional means to obtain funds to answer the demands made upon him by the Board and indorsing the expenditure by the Secretary of amounts enormously in excess of the limit allowed by law in view of the exceptional enormity of the disaster; and, thirdly, as affording the Board a firm basis for action in the future when confronted suddenly by emergencies of unprecedented magnitude. It is also a matter of congratulation that the bill made substantial recognition of the efficient services of two members of the Board in the work of sanitary relief.

As regards the provision for carrying on the manifold work of the Board, the appropriation was increased from $5,000 to $6,000 annually. This increase, while far from meeting the requirements of the case, is yet encouraging, as showing that the Board has the confidence of the law-makers, and that they are disposed cautiously to enlarge its means of active usefulness.

On the whole, then, in reviewing the sanitary work of the last Legislature, there is reason to feel that a certain advance has been made and to anticipate that the next will more fully adopt the recommendation of Governor Beaver to increase both the authority of the Board and the appropriation for its general expenses.

EPIDEMICS—SMALLPOX AT JOHNSONBURG.

The only outbreak of contagious disease which has caused your Secretary serious anxiety during the past year has been one of smallpox at Clarion Junction, near Johnsonburg, Elk County. On the evening of February 2, 1891, the following telegram was received:

"DR. BENJ. LEE, *Secretary State Board of Health*, *Philadelphia*.

"Bad case of confluent variola. Many expected. Come, send or advise at once.

"W. R. PALMER."

The Secretary at once telegraphed Dr. Spencer M. Free, Medical Inspector of the Western Slope District, to visit, inspect and if necessary quarantine. Early the following morning Dr. Free was on the ground, verified Dr. Palmer's diagnosis, and declared quarantine in the name of the Board.

At the same time a telegram was sent to Dr. H. M. Alexander, of the Marietta Vaccine Establishment, ordering virus to be sent to Dr. Free.

The hamlet in which the first case occurred consisted of six or eight small frame houses, grouped closely together, and distant from Johnsonburg about two miles. Exposure of many individuals in this settlement having taken place, Dr. Free decided to include the whole in his quarantine lines, and to make it the quarantine station and hospital in the event of other cases occurring in Johnsonburg.

One case, exposed to the first before the nature of the disease was discovered, did so occur and was promptly removed. On the day of his arrival the Inspector called a meeting of prominent citizens (Johnsonburg not being an incorporated borough), at which a sanitary fund was started and sanitary and quarantine committees appointed. The following circular was authorized and promptly issued:

Notice to the Citizens of Johnsonburg and Vicinity.

Smallpox has broken out at Clarion Junction. At present there is but one case. There is no occasion for needless alarm, but you should use every means in your power to prevent its spreading. Keep away from that neighborhood; clean up your cellars, yards, water-closets, stables, etc.; sprinkle chloride of lime freely in and about your premises.

Have every member of your family vaccinated.

Free vaccination will be furnished. The State Board of Health, in conjunction with the committee of citizens, has established strict quarantine, and will do all in their power to stamp out the disease.

We request your hearty co-operation in these sanitary matters, but in case of failure to comply the committee has full authority to compel the work to be done.

BENJAMIN LEE, M.D., *Secretary State Board of Health.*
S. M. FREE, M.D., *Inspector.*
M. J. MAXWELL,
SAMUEL LOWRY,
JAS. MCCLOSKEY,
W. W. GORE, } *Committee on Sanitation.*

JOHN BRYAN,
W. I. SECRIST,
E. F. CUMMINGS, } *Committee on Quarantine.*

Guards were established night and day and absolute non-intercourse maintained. Two thousand vaccine points were sent to Dr. Free, and considerably more than that number of vaccinations were performed by himself and Drs. Murphy and Palmer, of Johnsonburg, who gave up their private businesses in order to aid in the protection of the public health. Drs. Wright and Geisinger, of the P. & E. R. R., and Dr. Frank Earley, of Ridgway, also rendered valuable aid. On February 13, the Secretary visited Johnsonburg, held a consultation with Dr. Free and the Medical Inspectors of the Allegheny and Lake Districts, Drs. Thompson and Woods, and the officials of two of the railroads centering at this place, with reference to the maintenance of the quarantine, provision for sick employees and the establishment of railroad quarantine, should the disease become epidemic in Johnsonburg. The Secretary also addressed a citizen's meeting, supporting Dr. Free's measures and commending the spirit of ready compliance with the orders of the Board and of self-help displayed in meeting the emergency. The fact that railroads radiated in four directions from this center made it a matter of great importance to keep the infection hedged in, and the fact that at least twenty families had been exposed made it one of no little difficulty and requiring the most constant vigilance. The difficulty of obtaining nurses and a physician for the unfortunates thus shut up was very great, especially as the Board was unable to promise or assign payment for such services. This brought into prominent relief the importance of the establishment of a State Emergency Fund, to be placed at the disposal of the Governor and drawn upon by the Board with his approval in order to enable the Secretary to take prompt action in such cases. The Secretary drew up a bill for that purpose, which was introduced in the Senate by Senator Hall, but failed to pass. The difficulty with regard to a quarantine physician was solved by the generous offer of Dr. Murphy to remain within the lines. The number of cases was fourteen, and the number of deaths eight. The dead were buried in the mountain-side, directly behind the cottages and inside the lines. Thorough disinfection was practiced after death or convalescence before the quarantine was raised. The threatening epidemic was cut short there and then, no case having occurred elsewhere attributable to it, and Medical Inspector Free received a formal vote of thanks from the Board for the energy and good judgment displayed in his management of the affair.

To indicate briefly what the State owes to him and to the Board for their successful intervention in this case, we have but to revert for a moment to the epidemic now in progress in the province of Quebec, where the escape of a single willful girl from a hospital, where she was detained for observation, and her presence on public conveyances, has led to the development of 110 cases, with twenty-one deaths, and the establishment of eleven distinct centers of infection, covering an area of six counties, and the disease is rapidly spreading.

The local health authorities of Philadelphia, Erie and Scranton have, by the exercise of a like promptness and firmness, cut short outbreaks of this disease in their own cities during the year.

The cases in Erie and Scranton were directly traceable to the receipt of letters from Texas, where the disease was epidemic, thus clearly showing the necessity for disinfection of the mails under such circumstances.

The outbreak in Philadelphia was the result of the presence of an infected steamship in the port, the disease having escaped the observation of the port physician in consequence of the eruption being marked by that of another disease. After leaving this port, several other cases developed on the vessel, and the affair became the subject of correspondence between the Surgeon-General of the U. S. Marine Hospital Service and your Secretary. The incident only emphasizes the correctness of the opinion already expressed by your Secretary that the city of Philadelphia is running an unwarrantable risk in dispensing with the protection of a quarantine station during six months of each year. It may not be inappropriate to allude in this connection to the appointment of a

QUARANTINE COMMISSION

by the recent Legislature. In his third annual report to the Board, in 1887, the Secretary recommended that the Board urge upon his Excellency, the Governor of the Commonwealth, the importance of conferring with the Chief Executive of the neighboring States of Delaware and New Jersey and the United States Government with a view to the establishment of a thoroughly equipped quarantine station at some point farther down the river or bay than the present station at Tinicum Island. By resolution of the Board such a recommendation was forwarded to the Governor, but no action was taken upon it. At the instance of citizens residing in the immediate neighborhood of the present station the question was brought up before the last Legislature, and the following joint resolution was passed:

In the Senate, *May 13, 1891.*

Resolved (if the House of Representatives concur), That the Governor be and is hereby authorized to appoint four persons, who shall, with the Governor of the Commonwealth, constitute a Board of Commissioners, whose duty it shall be to communicate with the proper authorities of the Federal Government or of any State with a view to obtaining such concessions as will enable the Board of Health of the city of Philadelphia or the Commonwealth of Pennsylvania to secure a suitable site for a quarantine station at some point remote from the centers of population on the Delaware River. The Commissioners shall also inquire into the feasibility of establishing a joint quarantine for the protection of all the ports on the Delaware River and Bay, to be controlled by the several States bordering thereon. The Commissioners shall report to the next Legislature, and shall receive no compensation for their services, but shall be allowed their necessary and actual expenses for traveling, stationery and clerk hire, provisions for which shall be made in the general appropriation bill.

The following-named persons were appointed members of this commission by the Governor: Henry Leffmann, Benjamin Lee, John Huggard and Andrew Osborne. The members met at Harrisburg, July 1, 1891, on the call of the Governor, and organized by the election of Governor Pattison as Chairman and Dr. Henry Leffmann as Secretary. On the 7th of July the Commission visited and inspected the quarantine station at Tinicum, known as the Lazaretto, and on the 14th of October made a voyage of inspection down the Delaware River and Bay as far as Reedy Island, availing themselves of the courtesy of the Secretary of the United States Treasury, who, at the request of your Secretary, placed the revenue cutter "Hamilton" at their disposal for the occasion. The engineer member of the Board, Mr. Murphy, and Medical Inspector Atkinson, of the Delaware District, were present by invitation.

DIPHTHERIA.

This disease has been unusually prevalent both in city and country during the past three months, and has been of a rather malignant form. In one instance the Secretary has considered it necessary to close the public schools. While the disease is undoubtedly maintained, fostered and intensified by the filthy conditions which prevail in most of our small towns, yet, the principal reason of its widespread existence and its long continuance in neighborhoods is to be found in uninterrupted communication between the sick, the convalescent, the inhabitants of infected houses and the well and residents of uninfected houses. When we succeed in establishing this fact in the minds of the people and in inducing them to adopt the precautions which it necessitates, we shall have rendered epidemics of diphtheria as rare as those of smallpox now are. In view of the extremely infectious character of this disease, and of the fact that there are numerous instances on record in which bodies dead of it have become centers of infection in districts previously free from it, even train hands having caught the contagion from a corpse in transit, the State Boards of Health of Iowa and Ohio have decided to forbid absolutely the transportation of the body of a person who has died of diphtheria. The Secretary would suggest the adoption of a similar regulation by our Board.

TYPHOID FEVER,

on the contrary, is not spread by direct contact and infection. It is important that this fact should be as widely disseminated as the other. In an inspection made by the Secretary within the last month, a hapless individual, who, with several members of his family, had recently suffered from this disease, complained that the neighbors were all so afraid that they would not come inside the house, and he and his family found it difficult to obtain the necessaries of life and nursing care. This belief prevails quite widely, and is entirely unfounded. A well person may nurse a typhoid fever patient night and day with impunity, only taking the precaution not to eat or drink in the sick-room and to drink no unboiled water. A knowledge of this truth would save much suffering and privation in small communities. The disease has prevailed in the usual degree throughout the State, and in a greater degree than usual in the neighborhood of Bethlehem and in the city of Philadelphia. The indications in both places point to a polluted water supply as the causes. The investigation of Medical Inspector McIntire into the conditions in and about Bethlehem was very complete, and his report is commended to the careful attention of the Board.

(To be continued.)

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COMMUNICATIONS.

How Can We Control the Privy-vault Nuisance?*

BY R. HARVEY REED, M.D. (UNIV. OF PA.),
Health Officer, Mansfield, O.

THE Secretary of the State Board of Health, no doubt has, long ere this, appreciated the practical difficulties, coming from the different parts of the State, in getting rid of the omnipresent privy-vault nuisances; and, no doubt, as a consequence, he wrote me some months ago, inviting me to read a paper at this meeting, and suggested this topic for our consideration.

That he has struck on a practical subject is beyond a question. That he has suggested a topic that should interest every citizen in the State of Ohio is without a doubt. That he has invited me to open the discussion on a question that, combined, constitutes, perhaps, the greatest nuisance in the Buckeye State (saying nothing of the rest of the country) is beyond any peradventure.

To me it has always been an unsolved problem why the average citizen is so careless in reference to the care of the effete matter of his economy, which, in order to be healthy, must be expelled from the system every day. Travel where you please, from the swampy plains of the western portion of our State to the rugged highlands of our eastern borders, or from sparkling Lake Erie to the turbid waters of the Ohio, and you will find that, with very few exceptions, the water-closets and privy-vaults of our State are simply rude excuses of the most *temporary* character, which are intended to accommodate a business of most permanent character.

In fact, they are but rudely-constructed shells, cold and uncomfortable in winter, hot and offensive in summer, built over a mere make-shift of a vault, which is usually cased with the cheapest timber (if cased at all), usually located at some out-of-the-way place, often beside some hog-pen or chicken-coop, possibly at the rear of the garden or the back of a lot, if in a town or city, and usually regardless of the well or cistern from which the family must obtain their daily supply of potable water.

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* A paper read at the meeting of the State and Local Boards of Health held at Columbus, O., January 28 and 29, 1892.

I say, with me it is an unsolved problem why people should be so careless about such an important question. The same persons would howl with indignation if citizens were *compelled* by the State Board of Health to use such shells as they usually construct for their privies, even if free from fecal or other contamination, to but only wash their faces in once or twice a day the year round; or if they were compelled once a day during the winter season alone to sit with a portion of their face, their back or their breast bare to the cold winter winds for a few moments only, they would very soon charge up a cold in the head, a case of rheumatism or acute pneumonia to such exposure; yet they insist, without reason or necessity, to use water-closets, where another portion of the body must be exposed once or more during every twenty-four hours for a period varying from a few moments to several minutes to the cold winds of a Northern winter, and then they wonder why it is they catch cold and their wives and daughters suffer from vaginal or uterine catarrh, or that the male portion of the family, in common with the gentler sex, suffer from rectal or vesical irritation, or possibly from acute prostatitis in the male and ovaritis in the female.

There is no use of mock modesty in these questions which contribute so largely to the health and comfort of every citizen of our State; but we should look them squarely in the face and discuss their various phases carefully and conscientiously, as well as practically, in order to determine "how we may control the privy-vault nuisance" to the best advantage to all concerned. In order to do this intelligently, it is necessary to point out to a certain extent a few of the many difficulties which are the legitimate results of these nuisances.

Having merely touched on a few of these objections, we next come to the question proper of how to control them?

First, in the construction of an ideal privy, it should be so constructed as to protect not only the party who uses it from dangers to health, but the soil around it, as well as any neighboring well or subterranean stream of water, the cellar or the open air, from any possible chance of infection.

Second, it should be so constructed as to be comfortable to those who are obliged to use it, whether in winter or summer.

Third, it should be convenient.

In considering this problem, it is necessary to take into consideration how many are to use the privy; that is to say, whether it is for the use of a school building, a church, a courthouse or customhouse, a factory, a city flat or an individual family.

If it is a school building, then there is no other closet that I consider so nearly perfect as the so-called Smead dry-closet, which embraces all three of the requirements I have suggested, viz., sanitary protection, comfortableness and convenience.

If, on the other hand, it is to be used by a congregation, which, as a rule, occupy their church only once, twice or three times a week, then I would suggest, where it can be obtained, that an improved "water-closet" be used, and by this I mean a urinal and fecal basin, which can be kept clean by a liberal flushing of water after each time it is used, and so trapped and ventilated as to absolutely protect the room in which it is placed from any contamination whatever.

In country churches, however, which cannot avail themselves of water privileges, I would suggest the use of the ordinary "dry-closet," which is cheap, convenient, cleanly and easily kept in a sanitary condition.

In supplying a factory or manufacturing establishment, where a large number of men work, I would also recommend the use of the Smead "dry-closet," as being preferable to anything else where it can be adopted, as such closets can be placed at a convenient point in the building, and not only be kept in a sanitary condition, but at the same time be comfortable and save the employees much loss of time by running out of the building and back again every time they desire to "relieve nature." Especially are these closets desirable for molders and those who are exposed to a high temperature, or where the physical labor is such that they are kept in an almost constant perspiration, for by the use of these closets, which are warm and comfortable, the employees are less subject to "catching cold" or of contracting pneumonia than where they are obliged to go out of doors in this heated condition, and use cold, uncomfortable, filthy privies, as is usually found under these circumstances at the present time. We are firmly of the belief that the construction of such closets by every manufacturing company means economy not only to the company, but also to the employee—

(1) By the simple saving of time, and

(2) By the prevention of sickness and disease.

If the Smead "dry-closet" cannot be used, then a closet should be constructed at some convenient place which can be kept warm, and made with a double row of individual seats so arranged, with a partition between each row, that the occupants will sit with their backs to each other. By this method the fecal matter is deposited into a trough, which should be at least a foot or eighteen inches in depth, containing at least from ten inches to a foot of water, which should be so constructed as to be used during the day, and each evening washed out and fresh water supplied after the contents, which accumulated during the day, have been allowed to escape into the sewer. This same closet can be arranged for urinal purposes by having the lid of the seat for each person attached to a hinge, so that it can be raised up when desired to be used for micturition only. A closet so constructed is cheap, can be kept perfectly clean without the least possible smell, and can be placed in a convenient portion of the building, and, where there are water privileges, ranks second, in my judgment, to the so-called Smead "dry-closet;" although it requires more trouble to take care of the latter than the former, yet it is cheaper to begin with, and if properly cared for is not at all objectionable.

The idea so prevalent among manufacturing companies, that any kind of an old shed stuck off at one corner of the lot on which the building stands, with a stinking, filthy vault, usually nearly filled with decayed fæces, and so offensive as to disgust the most refined senses of a country shoat, is worthy of the severest criticism and condemnation.

I have investigated many of these privies in different parts of the State, and, as a rule, find them little better than the old rail and pit used during the war for the soldiers in their camp-grounds, and the sooner our State Board of Health takes hold of these matters, and not only educates the people to a higher standard of refinement in these cases, but compels them to abandon these insanitary, uncomfortable and inconvenient privies, and adopt improved methods, the better it will be for all concerned, whether a manufacturing company, a railroad, a schoolhouse, a church, or any other public building.

Repeated investigations of the average building blocks reveal the astonishing facts, that whilst they are intended to be occupied not only by the proprietors themselves, but a number of clerks or salesmen, as the case may be, yet many of them have no provision whatever in the way of water-closets, or, if they have, they are inconveniently located in some dark, obscure corner of the building, where a majority of those who occupy the building must either run up or down one, two or three flights of stairs in order to occupy the closet, which is not only inconveniently located, but cold and oftentimes improperly trapped and ventilated and in a filthy condition. Buildings of this character, if heated by a furnace, should have a comfortably-located closet so arranged, on each floor where such is needed, that the alvine discharges would be immediately deposited in the furnace and cremated according to the method recently devised by Colonel Smead, of Toledo. If this cannot be done, and water privileges are available, then I would advise having a small room set apart for this purpose on each floor, which should be so located as to be comfortable in either winter or summer, and the "stool basin" connected with the public sewer, and so trapped and ventilated as to be absolutely safe from sewer-gas, and, in addition to this, be kept clean and in a perfectly sanitary condition.

If either one of these systems of caring for the fecal discharge is adopted and properly carried out, there need be no trouble about their convenience, their comfort or their sanitary surroundings.

If, however, neither one of these former plans can be utilized, then suitable "dry-closets" should be placed in the most convenient location (the special construction of which will be described later on in this paper), and made in such a manner as to be well ventilated and as comfortable as possible during any time of the year, and especially free from drafts during the winter season. By proper care of such closets, even where they are used by a number of inmates, they can be kept in a perfectly sanitary condition, but, like everything else of this nature, it requires care to keep them so.

As a rule, however, you will find closets connected with business blocks filthy, because nobody cares for them or tries to keep them in a proper condition; and when you notify the tenants, they refuse to keep them so because they are paying rent, and claim that the landlord should attend to these matters; and when you notify the landlord, he will retort by saying that if the tenant is not satisfied with the surroundings and accommodations he can move out. Neither one of these excuses, however, is satisfactory to the Health Department, or those who are obliged to use these closets every day, and fall short of meeting even the ordinary requirements of a well-organized board of health.

The so-called "flats" present another troublesome class of buildings for the Health Department to look after in reference to privy accommodations. They are very similar to the business blocks we have just described, with the exception that they are usually divided up into more separate departments, each representing a private family, who, as a rule, desire to be as distinct from their neighbors as possible, whereas the business blocks are not usually divided into so many integral parts representing separate and distinct interests. In reference to the remedying of this class of buildings, I would make the same suggestions as I have already made in reference to the business blocks, only so modified as to accommodate the peculiar condition of this class of buildings.

No courthouse, customhouse or statehouse should be allowed to be constructed "nowadays" that is not amply provided with all the modern appliances for heating and ventilating, together with the necessary, convenient, comfortable, cleanly and strictly sanitary water-closets for the accommodation of all those who may be required to occupy these buildings.

This class of buildings, which are occupied most continuously, should be heated by "air warmers" that are capable of supplying a bountiful supply of pure, warm, fresh air to every department of the building, and at the same time be so constructed as to remove all the foul or cold air as rapidly as it collects. They should be supplied with the Smead "dry-closet," which can be so constructed as to accommodate any number who may occupy the building, and which can be conveniently located as well as kept comfortable, clean and in the highest degree of sanitary perfection, with practically little or no expense either summer or winter. That this class of buildings is, as a rule, poorly heated and ill-ventilated is beyond a question. In fact, they are the most expensive buildings in our country, built with an eye singular to external beauty, while sanitarily they are little short of mere death-traps usually heated from day to day by s eam with no ventilation, with dusty floors and dusty walls, which are seldom swept or cleaned, within which the clerks are confined year in and year out, and under these sanitary conditions are expected to give the highest class of service to the State under the lowest possible sanitary surroundings.

Take, for instance, our State Capitol in this very city, which I inspected a few years ago, and made the following comments, which were published at that time in the *Sanitary News* of Chicago, in which I said, "We next went to what is known as the 'old closet' of the house, which is an old-fashioned closet without traps of any description, and which is intended to be cleansed by a meager flushing of water from a 'tank supply and after wash,' but which fails very decidedly in its purpose. Here the ventilation is supposed to be the 'downward-draft system,' while a test showed a draft sufficient to carry quite large pieces of paper out from the closet into the room instead of downward. This draft is constantly supplying the building with the poisonous sewer-gas in unlimited quantities.

"Here the urinals are of the old style, lead-lined and without either traps or ventilators, and are ably assisting in the work of furnishing the Capitol with copious supplies of poisonous air.

"The Senate water-closets and urinals revealed the same deplorable condition as those of the House. On examination of the 'flush-tanks' we found the overflow pipe connected with the sewer without either trap or ventilator, and, unless there should be a constant overflow to prevent it, there is an immense discharge of sewer-gas, which is sickening and revolting. These tanks are so situated in dark closets as not to be seen, but, by their location in the building, they are enabled to supply it with a bountiful supply of poisonous gas.

"The main sewer of the Capitol connects with the Broad Street sewer, and is trapped with an S-trap and ventilated through the smoke-stack, which is also intended to give a 'downward draft' to the water-closets, but which is a practical failure as it stands to-day. . . . . The escape of sewer-gas in the basement is so extensive some days as to sicken the visitors who attempt to go through that part of the building. On other days it is scarcely perceptible. The writer, having been present in both of these conditions, is of the opinion that this condition depended greatly on the direction of the wind as well as the unsanitary plumbing."

While it is to be hoped that this condition of things has been remedied in our State Capitol,* yet the former condition of the Capitol very fairly represents the present condition of many of the courthouses and public buildings of our State at the present time, and in my humble opinion it is high time these buildings be thoroughly inspected; and if there is no law to compel the authorities who have control of them to place in a proper sanitary condition their water-closets, and protect them from sewer-gas and the like, the sooner such a law is enacted the better.

We have *purposely* left to the last the most important paragraph of this paper, not that each individual case is of more importance, but because it represents an aggregate of much greater dimensions than any of the former. It seems almost useless for me to call the attention of the members of this convention to the special construction of the average water-closet used by the average citizen of this or any other State in the Union. That they are uncomfortably cold in winter and hot in summer is beyond a question. That they are uncomfortable and filthy all the time is self-evident. That they are usually inconvenient needs no proof, but a simple inspection, and that they are cared for less, although used much more, than any other department of the household of the ordinary family is beyond a doubt. I assume that there is not a health officer present here to-day, who has been on duty in that capacity for a year only, who has not seen one or more instances of sickness, or even death, attributed to these murderous agents, that are not only *tolerated* but *harbored* by almost every citizen in our State. Take, for instance, the prevalence of typhoid fever, which was unusually marked in many localities during the past season, and which, to a large extent, owed its existence to the universal prevalence of these poisonous pits, which, together with the dry weather, allowed the leachings from these vaults to become more concentrated as they found their way through the soil to the scanty supply of water in the neighboring wells from which the people obtained their drinking-water.

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* Which I have found to be the case since reading this paper.

This brings us to another point which is well worthy of our attention, and that is, to "show up" the fallacy of the old mathematical legend that a well or other hole in the ground only drains a radius equal to a diameter of twice its depth.

Our farmer friends have practically proved the fallacy of this antiquated theory, and have shown, by the tiling of their land, that a tile-drain of ordinary depth, say a foot, and not to exceed two feet, will drain a section of ground for thirty feet on each side of the drain; or, in other words, they place their lines of tile sixty feet apart, and not to exceed two feet deep, and yet in this way they drain perfectly the entire surface between the lines of tile, which, according to the old theory, should only drain the land for a distance of two feet on each side of a drain that is two feet deep.

Now let us go back and apply this principle to the water-closets, not only in our cities and towns, but in our farming communities as well. Take an ordinary village of 500 to 2,000 inhabitants, and the soil of that village is as full of these death-traps as a pepper-box lid is full of holes; intermingled with the closets are their wells of water, varying from 20 to 100 feet in depth, which are seldom to be found over 200 feet from one or more privy-vaults, and yet the citizens wonder why the Lord has visited them with a scourge of typhoid fever, or chastised them for their iniquities by an epidemic of diphtheria; yet to the sanitarian, who simply takes a common-sense, practical view of the situation, it is just as plain and easy to answer as it is to tell why a man dies when he is suspended with a rope around his neck, which shuts off his wind.

For instance, if a drain one foot deep will drain 15 feet on either side of it, or in all 30 feet of soil, then a well 50 feet deep would drain a radius of at least 1,500 feet; or, in other words, a water-closet 750 feet from this well would be liable to contaminate it with its leachings in the course of time, saying nothing about the possibilities of our wells being supplied by subterranean streams of water, which may pass under a score of these water-closets, which may be a mile or more away, and thus become contaminated and unfit for use by the filtering of these foul receptacles.

Again, our farmer friend, who, from practical experience as well as economy, knows that it is not necessary to place the lines of tile more than two feet deep, or closer together than 60 feet, yet, on the other hand, will dig a well 50 feet deep that is within 200 feet or even 100 feet (and often very much closer) to a privy-vault, that is nothing more than a hole in the ground, for the deposit of the foulest concoctions that is possible to be collected in it, which is allowed to filter, year in and year out, through the surrounding soil into this well.

The same farmer seems to forget, in the location of his well and privy-vault, the same principle he applies in the tiling of his land, and apparently he does not stop to consider the danger to life and health of himself and family; or, if so, he does not consider them as valuable as the crops he raises off of properly-tiled land, or the money he saves by discarding the "old rule" of drainage by adopting the new, which saves him thousands of dollars in the tiling of his farm as well as serves him every purpose that tile placed closer together would. Probably he does not understand that these poisonous germs do not lose their vitality by filtering long distances through various strata of soil. If he does not, it is time he should be acquainted with this fact and discard the "old theory," that filtration or æration of water does not kill the germs of disease that have found their way into his drinking-water, and give him healthy, potable water.

Having shown briefly some of the dangers connected with these abominable privy-vault nuisances, we now come to the question of "how to control" and prevent them.

First.—In cities where there are water and sewer privileges, then, I would recommend that the common privy-vault be absolutely abandoned and prohibited by fine and imprisonment, if necessary, and that either sanitary connections with the sewer be adopted, and such connections made with every residence, where it is practical, or that the ordinary "dry-closet" be adopted where sewer connections and water privileges are not available.

By the "dry-closet" I mean a comfortably constructed building, located at some convenient place near the dwelling, and that, instead of using the ordinary vault, it be so constructed as to allow of the use of an ordinary vitrified three-toller six-gallon crock to be placed under each hole in the privy in such a manner as to catch all the fecal and urinal discharge without contamination of any other part of the closet, and that each time after the use of these privies, the parties using them be required to throw a small scoopful of dry ashes or dust over the discharges just deposited in the crock, and in this manner the closet can be kept free from offensive odors, and can be easily and cheaply cleaned, and all contamination of well-water absolutely prohibited. In the place of crocks a large bucket of galvanized iron with a suitable bail can be used; but the old-fashioned method of making these dry-closets with wooden drawers should be abandoned, as the wood is liable to soon rot, and thereby permit leakage of their contents into the soil or the building, or both.

These closets can be constructed much cheaper than the old-fashioned "vault-closets;" and, owing to the method, their construction can be placed in a much more convenient position than the former, and are certainly much more comfortable in winter as well as in summer, if properly constructed; they are more easily cleaned, which can be done a great deal cheaper and easier than in the case of the old-fashioned "vault-closet."

All that is necessary in cleaning a "dry-closet" is simply to take out the crock or crocks which are full, and replace them with empty ones, which can be done without disturbing their contents in the least, until it is taken to the place where it is to be deposited, when the crock can be cleaned, and afterward kept in readiness for another cleaning of the closet and exchange of vessels, which should be done as often as the necessity of the case requires, which seldom exceeds twice or three times a year in ordinary families.

Those who have had any experience in cleaning the ordinary privy-vault are familiar with the fact that it is not only filthy but *offensive*, and an *expensive* job to all concerned, and usually costs the owner from $5 to $10 for each cleaning. This expense and trouble can readily be prohibited by the adoption of the "dry-closet," which can be cleaned at an expense not to exceed $1 or $2 each, without any trouble or offensive odors which are usually so prevalent in the cleaning of the ordinary privy-vault.

I perhaps should add here that in the construction of a "dry-closet," provision should be made for keeping a quantity of dry ashes or dust at some convenient place in the closet, supplied with a small tin scoop, in order that the ashes or dust may be easily dusted over the stools after each time the closet has been used.

In concluding this discussion of "How can we control the privy-vault nuisance," I would suggest that we control it by *abandoning* it *entirely*. By this I mean that the State Board of Health should pass rules and regulations prohibiting the construction or keeping and maintaining of all privy-vaults under any circumstances whatever; and if they have not the power to make such rules and enforce them, then we should ask our legislature to pass a law which would give them that power beyond a question.

The day for maintaining any known nuisance should be classed with the history of the dark ages of sanitary reform, and anything that contributes so clearly to the developing and maintaining of sickness and death as does the privy-vault nuisance should be condemned at once, and the most vigorous steps taken to prohibit it; for if there is any one *common nuisance* that does interfere with the public health throughout the State, certainly the privy-vault nuisance stands pre-eminent.

It is not necessary that the Board of Health should enforce any particular system of water-closets or privy-vaults, but simply recommend from time to time what they consider the best, the least offensive and the most practical. This is a day of progression, and whilst we may consider the present so-called Smead "dry-closet" as pre eminent to-day, some new invention may supersede that just as far as it supersedes everything else at the present time; or, on the other hand, I would not recommend the adoption of any particular make of water-closets to the exclusion of all others, but simply would recommend, from time to time, what may be considered the best at that time, and leave the matter open for improvements, and the adoption of such improvements as may come up for consideration in the future. The same remarks hold good in reference to the "dry-closets;" and whilst it is the best system that we know of at present to take the place of the old-fashioned privy-vault, yet we are in hopes that something still better may be presented to us, and that we may be left free to choose it if we desire; but I would recommend and urge on every health officer and member of every board of health present, including the State Board of Health, that they "pool issues" in prohibiting the construction or even maintaining of privy-vaults in any portion of the State under any circumstances whatever, in the belief that, in so doing, they will be protecting the public health by promoting the greatest good to the greatest number of citizens in this great and progressive Buckeye State.

Mansfield, Ohio, January 28, 1892.

Subterranean Paris.

THE WATER SUPPLY AND SEWERAGE OF THE FRENCH CAPITAL.

BY DR. PROSPER DE PIETRA SANTA,
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[SPECIALLY PREPARED FOR THE ANNALS OF HYGIENE.]

(Continued from page 138.)

THE SEWERS.

IT now becomes incumbent upon us to take into consideration two important chapters:

(1) The various forms of *cesspool-canals*, otherwise also termed the means to get rid of the excremental matters, what constitutes the sewerage proper of the English.

(2) Better methods of utilizing the sewer-water.

I. As soon as we begin to examine with care the topography of Paris, we easily recognize that one single system or method of sewerage cannot be applied to all the districts of the city, even not considering the fact necessitating the complete alteration of the ancient systems and the general introduction of the new programme as it has been approved by the public authorities.

In reality the principal methods in usage are these: the all-sewer, the system of Berlier, the system of Waring, the movable tubs and the fixed drains. We will let them rapidly pass in review, beginning with those which are destined finally to disappear to make room for those on which the majority of the votes of modern hygienists have united.

(*a*) *The fixed drains*, constructed and introduced into the cellars and into the subsoil of dwelling-houses, were the first regular system of sewerage provided for the population of cities.

In Paris the erection of water-closet drains was made obligatory near the middle of the sixteenth century by a law of Parliament, confirmed by an edict of Francois I.

Since that time the water-closet service has been subjected to the severest regulations, but the strictest supervision did not succeed in preventing or destroying the unhealthiness inherent in the principle itself of their construction.

The idea of making water-closets (cesspools) water-tight is a myth; more or less, they all allow their contents to escape into the subsoil which surrounds them, and which, sooner or later, is converted into an infectious and disease-producing swamp. In consequence of this the propriety of water-closets (cesspools) in houses inhabited by workingmen and in tenement-houses becomes an impossibility, because their utility is incompatible with the employment of a large quantity of water. The gases which escape from this mass of decomposing matter cannot always be made to ascend to the higher regions of the atmosphere, notwithstanding the use of all kinds of escape-pipes, and they become noxious and hurtful to the inhabitants—the operation of the water-closet drains, even with the most perfected systems of aspiration-pumps, is always inconvenient and cumbersome for the streets. Finally, such drains are by no means without danger for the workingmen who have to repair them.

On the whole, we can say, therefore, that the fixed water-closet drains are henceforth condemned by city-hygiene.

(*b*) *The movable tubs* (reservoirs in the form of casks or tubs, cylindrical in shape, and made of zinc), which are placed under the basins of water-closets, and which one can see when they are filled, form an improvement on the fixed drains. They render service in public establishments and in cities which cannot well bear the expenses of a special canalization, but they also possess great inconveniences because they have to be lifted out and transported, and, besides, because of their indispensable corollary, they are the depositors and manufacturers of sulphate of ammonia.*

(*c*) *The Waring system*, which your wise compatriot has introduced in Memphis, and which you in the United States will know very well, was employed in Paris, in 1884, in the sewer of Vieille du Temple Street, at the request of the Sanitary Commission of the Seine. The total length of the basin, if we include the branches leading into houses, amounted to 725 metres. The diameter of the conduits in the Doulton flue amounted to 0 m. 152; the fall varied from 0 m. 003 to 0 m. 0197. The main emptied into the sewer in Rivoli Street. It was aired by the flues from the cesspools of both ecoles (public schools) and of one public market and by two special air-passages, which were placed in the neighborhood of the sidewalks. Seven discharge-basins of the Rogers-Field system carried the contents to various points of the canalization.

Jules Rochard, from whom we have taken the preceding description, acknowledged himself that this system gave quite *satisfactory results*. These results would probably have been far more decided if the municipal service would have had more complete the system for the second canalization reserved for rain-waters.

In point of fact, if the *separate system* brings with it in principle a double

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*Among the innumerable apparatus investigated in Paris the best results were obtained from the following: *the filter tub*, made after the divided system; *the Bonnefin system*, which excluded water absolutely; *the automatic Mouras closet*, a variety of the fixed drains, from which one flue passed directly into the sewer, and the other was so arranged as to carry any bad odors away into the air, the pipe passing into the sewer from the upper part with an opening in the inner wall of the closet.

canalization, to make a fair trial of it, it naturally failed, because it was bound to the obligation of the other (which had not been finished.—Remark of the translator).

In a communication made to the French Society of Hygiene in 1881, and which is published with plans and drawings attached in its Annals, our learned colleague, Colonel Waring, thus recapitulates its conditions:

"It is not necessary to have in our sewers in Paris a constant stream of water to reclaim a prodigious quantity of fluids. A thorough and complete cleansing can be obtained with an infinitely smaller proportion of water by the system of *intermittent drains*, made possible by the ingenious apparatus of our able colleague of the society, Rogers Field, of London.

"If we, therefore, to recapitulate, suppose the city of Paris to be in possession of a system of sewers constructed according to the model of those of Memphis, all these impurities could be transported with a volume of water of *ten times* less the quantity than has been thought indispensable.

"Under these conditions the total amount of sewer-water of the capital could be fully utilized as far as the island of Gennervilliers, and your handsome river Seine, freed from its daily pollution, would, as soon as it left Paris, regain its natural limpid state, which it possessed on entering the city."

(*d*) *The Berlier system*, or pneumatic sewer-service, naturally belongs to those systems which work by aspiration. Its application to Paris has called forth a lively opposition, because it would be opposed to other hygienic projects about to be carried out; but it has given excellent results in some districts, notably in the rich regions of the 8th and 9th arondissements, where it has been tried.*

Theoretically it is decidedly logical; practically it necessitates a far greater outlay of money for its erection and also for its maintenance; among other things it becomes impracticable in streets having a high grade and in all elevated districts of the city.

It was in the year 1882 that Mr. Berlier explained before the French Society of Hygiene the ideas and the principles of elevated water-closet drains, which he had previously introduced in the city of Lyon.

I take from the Annals (reports) of the society the principal paragraphs of his elaborate explanation.

"To purge the habitation of all fermentable matters which are daily produced there, and to destroy effectually all causes of infectious diseases, three questions have to be solved:

"(1) To remove all excremental matters in the proportion of their production.

"(2) To transport them to a remote place without, during the transport, their becoming noxious by their contact with the air, the water and the ground.

"(3) Finally to conduct them into the country, there directly to make them useful for agriculture, where they must be treated in special works to withdraw from them all ammoniacal products.

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* The most complete test of it has been made in the barracks of the Infantry de la Pepinierre.

"To fulfill the first condition we have devised two apparatus, one of which is *the receiver* and the other *the evacuator.*

"These two apparatus, which are independent of each other, and each of which has to play a role very distinct from that of the other, are erected on some property and connected with a canalization of cast iron which may be placed in the sewers or in trenches. The solids and fluids are carried along this canalization by means of a pneumatic pump, which performs its labor in the aspiration works, which are erected at the lowest point of the city.

"*The receiver-apparatus* is placed under the drain of the water-closets at the point, where it arrives at the fixed drain or in the filtration tubs which enter the cellar. This species of rectangular chamber incloses a demi cylindrical grater, intended to strain all foreign bodies, and a shaft carrying paddles which, by their rotary movement, agitate the mass contained in the apparatus and force it to undergo a veritable trituration.

"*The evacuator-apparatus,* connected with the receiver by a pipe of eighty millimetres, is a hollow cylinder, terminating in its inferior part in a cone and a tube, which end in the pipe coming from the sewer, which is constantly kept empty. In the interior of the apparatus is a hollow float of cylindrical shape, which in its inferior part terminates in a caoutchouc ball that lodges itself on the summit of the cone and serves as a lock to close hermetically the communication which exists between the two apparatus erected on the property, and connected with the canalization of the street.

"The second condition is realized by a metallic closed canalization, which with rapidity and in an uninterrupted manner carries the water and solid matter toward the aspiration works by means of a pneumatic aspirating pump, which receives its power from a steam engine. One obtains in this way the emptying of the reservoirs where the collecting pipe containing the sewage has its orifice.

"The third condition is secured by the action of a rotary or centrifugal pump, which drives back the sewerage to the places where it is to be utilized for agricultural purposes or transformed to serve industrial aims."

(*e*) *The system of all-sewer,* which Alfred Durand Clay has so stoutly sustained by his writings and by words (reports, monographs, communications to scientific societies, conferences, etc.), represents at the present time the most rational type. "It is simple in its formation and in its execution" (Marie Davy).

With it disappear forever the fixed drains and open-air pipes, the movable tubs and filters, the cesspools, water-closets and the transport of fecal matters, the reservoirs and the factories for sulphate of ammonia. It replaces them all most advantageously by immediately evacuating all excremental matters forced out of the houses by means of a rapid current which, without interruption and without causing the least stagnation, continues in the mass of sewer-water until it reaches the works at Clichy, where it spreads the sewerage all over the irrigation-fields of Gennervilliers.

The new system utilizes the whole system of sewers of the city, all that it has received through Belfrand (great collections, secondary canals, house-branches), and that I described above.

That the regular action of the "all sewer" should be possible, the following conditions are indispensable:

(1) *The Fall or Grade.*—All the parts of the system have a convenient fall varying from om. 01 to om. 03 per metre for the purpose of facilitating the drainage of the sewer water without producing the stagnation of the solid matters.

(2) *The water-tight closure* of the conduits to prevent the infiltration of the ground surrounding them, and to do away with every kind of inconvenience and danger resulting from the fixed drains. Emil Erélat, in a learned report to the Society for Public Medicine, acknowledges that the builders daily prove by facts that they know how to execute air-tight brickwork. They anyhow confirm that, with the admirable resources which industry and science have discovered in the modern cements, they can produce the complete impermeability desired.

(3) *The Facility of Circulation.*—This is already favored by the fall and by the impermeability of the inner walls, and made complete by the ovoid or half-circular form which has been bestowed upon the sewers of every category. In the recent constructions the house-branches are connected with the street-sewers by bent joints, and for a part their sides are walled in as the sewer is.

"Thanks to this arrangement, thought of and introduced by Alfred Durand Claye, the main canalization and the special branches all form one continuous whole. It is a veritable tube with no recesses of whatever kind where solid matter could lodge, no projecting points where it could be retained" (J. Rochard).

(4) *Abundance of Water.*—This is indispensible so that at the moment of their discharge into the water-closets (distributed over the dwelling in accordance with a special regulation) the solid matters may be immediately diluted, stirred up and comminuted by a copious flow of water, and carried by it into the sewer without there being a possibility of the gas flowing back into the house. On leaving here the matter is at once quickly carried, without the least loss of time or stoppage, on its way outside of the city.

The quantity of water considered necessary for the salubrity of the water-closets by the Health Commission, and already prescribed by the new municipal regulations, is ten litres per day per inhabitant.*

(5) *Constant Surveillance.*—This supervision, practiced under conditions so easy that a person can freely promenade all through the sewers, should aim at the constant and regular realization of the conditions which created them.

The persons selected for this service—specially chosen because of their vigor and agility—need not dread the mephitic exhalations and the spreading of germs of infectious maladies.

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* "The medium weight of ejections in a given population of men, women and children included is 1.260 grammes per day per person. They arrive, therefore, in the sewers diluted by nearly ten times their weight of water. They drop into the current produced by the rain-water, by that from irrigations, those from houses and industrial establishments, the quantity of which for a city like Paris is about 125 litres for each inhabitant. Every litre of sewage, therefore, finds its solution in 135 times its volume of water, and after this addition the 135 litres do not carry more than nine to ten grammes of azote at the highest" (J. Rochard).

"Because of the prejudice to the contrary still existing on the Continent," writes de Freycinet, "one cannot often enough repeat that the matters in the cool sewers have not by themselves any susceptible odor to incommode the workingmen and the inhabitants."

To establish the toxic properties of the gases developing from the sewerage the experiments have been invoked which were made by Boutiny and Descourt upon a dog kept in a glass cage, hermetically closed; and when Alfred Durand Claye repeated the same experiment, under the same conditions, he never arrived at any other conclusions.*

Finally, I believe with J. Rochard that we may consider it as fully proved that from the rapidly flowing sewer-water no fecal matter disengages itself sufficiently diluted, nor that there exist any disagreeable odors or noxious gases. This liquid mass in its continuous movement does not seem inclined to exhale into the air pathogenic (germs of contagious maladies) micro-organisms.

Before I close this chapter, I may be permitted to recapitulate in a few words the fundamental principles of the system of *all-sewer* adopted by the authorities as the most apt to receive quickly a wide application, and as offering at one and the same time an immediate and a future improvement.

Immediate evacuation by the medium of water of all matter outside of the dwelling.

Carrying away quickly and uninterruptedly without the least stagnation in the mass of the sewerage.

Filtration and purification by the sun.

Utilization for agricultural purposes.

AND AS CONSEQUENCES:

Suppression of drains (fixed and movable).

Suppression of open pipes and drains.

Suppression of cesspool and water-closet sewerage.

Suppression of works for the burning of fecal matter in the suburbs.

(TO BE CONTINUED.)

The Christian Sanitarian.†

BY JOSEPH F. EDWARDS, A.M., M.D.

By a Christian sanitarian, I do not mean to imply any exclusion or disrespect for those who are not what we ordinarily understand as Christians. I would take a broader meaning for the word Christian, using it merely because it is a word that conveys a very comprehensive meaning to the public mind. When one wishes to speak very highly of a man, it is not uncommon to characterize him as a "Christian gentleman;" this, irrespective of any reference to his religious views. So, then, in speaking of a Christian sanitarian, I would have it understood that I am not in any way referring to religion, but that I wish to make clear the idea that he who is a Christian in this broader sense of the word is of necessity a sanitarian, and that he who would be a sanitarian must of necessity be a Christian. Nature, Religion and Hygiene, I take to be a trinity, inseparably united, intricately interwoven, and forming the basis of all human happiness. He who loves nature is anxious to familiarize himself with and cheerfully willing to obey her laws; he who thus lives is, in the truest sense of the word, a Christian, and, at the same time, he is the most perfect of sanitarians. Recognizing that, in a convention like this, we are talking for, if not to, the general public, that we are supposed to be addressing those who have no knowledge of the subject of hygiene, I am particularly glad that I have been allowed to speak thus early in our proceedings, because I am anxious to endeavor to remove from the public mind an erroneous impression somewhat firmly wedged therein, and by so doing prepare our audience to take an even greater interest in the proceedings that are to follow than might otherwise be the case. The erroneous idea to which I refer, and which those of us who are devoting our efforts toward sanitary enlightenment find as our chief obstacle, is the somewhat ill-defined idea having possession of the public mind that hygiene is a something with which they have nothing to do, that it belongs to the doctors, that it is unintelligible to, and incomprehensible by, the non-professional mind, and that there is no reason for the public to take any interest whatsoever therein. One might as well say that, because you have here in Norristown a fire department and a receiver of taxes, there is no reason for the public either to pay their taxes or to institute any personal precautions against fire. It is true that hygiene might be considered a branch of the art of medicine, so to speak, but it is the popular branch; it is the branch in which it is all-essential that the public should be enlightened.

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* He placed a dog in a cage having the cubuture of 172 litres, in the presence of fresh matter diluted one-hundredth, and at the end of one hour and forty-five minutes, without renewing the air, the animal was found in just as good condition, only fatigued a little. In the presence of a mixture of fresh matter and water in equal parts he had to take him out at the end of one hour and twenty-four minutes, because he seemed much depressed. Finally, the same animal could, without the least apparent inconvenience, rest by the side of fresh and undiluted matter in the open air for one hour and fifteen minutes!

† Read before The State Sanitary Convention at Norristown.

We take it as granted that no educated or intelligent person will to-day assume or claim that very much of the disease which afflicts humanity cannot be prevented. This we can accept as a dogma. Well, then, such being the case, is it not the height of absurdity for any one to claim that the knowledge which will enable us to enjoy this possible immunity is a knowledge with which the people have nothing to do? One might as well say that the people have nothing to do with the elections in this country, because we have those who make a business or profession of handling them; but just as it is the people themselves who make the ballot effective, so is it and so must it be the people who will and who only can make effective the hygienic teachings that emanate from the medical profession.

But, while it is vitally important that we should have the sympathy, support, co-operation and interest of the people, it is at the same time imperatively necessary that the people should truly understand what is meant by hygiene.

The ordinarily accepted notion that hygiene means "living by rule," that it necessitates one's going to bed and getting up at a certain hour, that just so much and no more, and just such kind and no other, food must be indulged in, that the nicest and most precise methods must rule our daily actions—methods so nice, precise and exact that they become irksome. That such is the popular idea of what is meant by hygiene was well illustrated to me some four years ago, when contemplating the establishment of THE ANNALS OF HYGIENE. I consulted first with some of the leading publishers of Philadelphia, such men as Mr. George W. Childs, Mr. Frank McLaughlin, publisher of *The Times;* Mr. Talcott Williams, of *The Press*, and many others. The universally expressed opinion was that such a journal could not be made successful, because hygiene was not a popular subject. The faith that was in me, the good opinion that I entertained of my fellow-men, caused me to believe that the seeming or apparent unpopularity of the subject was merely the natural and inevitable logical sequence of the fact that hygiene had not been presented to the people in a popular manner. For, I reasoned, if a so-called intelligent person really comprehends the true meaning of the word, if he learns that it means to him the preservation of his health, and the prolongation of his life in a state of health, then, if you tell me that he will not be interested in such a subject, it is equivalent to telling me that he is not an intelligent person. Certainly, no one will deny that any and every intelligent person is anxiously desirous of preserving his health and prolonging his life, provided his health is preserved, and to presume that an intelligent person would not take the most vital interest in acquainting himself with the knowledge that would vouchsafe to him this prolongation of a healthy life, was to hold a degraded view of human intelligence to which I could not bring myself to accede.

In spite, therefore, of these adverse opinions, the journal was started and conducted in a popular style, so that all which it contained would be thoroughly intelligible to all, to those without any notion of professional literature. At first it was, and is yet, difficult to induce non-professional people to take this journal because of the fact we have already noted, that the very word "hygiene" is repellant to them; it at once conjures up before the mind a something mysterious, professional, scientific, requiring an amount of privation and self-denial that would make the life of him who practiced it not worth the living. But, let us succeed in inducing intelligent men or women to agree to receive this journal for one year, and, in the vast majority of instances, they have thereby become lifelong, earnest, enthusiastic believers in our doctrine. To-day, throughout this great State, in every city, town and village, in remote country districts, there are intelligent men and women who are monthly receiving and reading THE ANNALS OF HYGIENE, and why? Because, after reading a few numbers, they came to learn that their former notions about hygiene were all erroneous. Far from meaning an unpleasant asceticism, they soon come to find that it implies but an acquaintance with nature that not only does not make life less pleasant, but that guarantees the greatest possible pleasure that can be the outcome alone of a healthy, natural life. I have thus ventured to lay before you a page from my personal experience, because, to my mind, it well illustrates the obstacles in the way of a popular acceptance of hygienic teachings, and how such barriers may be removed. If we can but make the people, the 65,000,000 people of this land, understand that the laws of hygiene are but the laws of nature; that the natural laws govern the propagation, development, conveyance, transmission and destruction of disease-producing agencies; if we but believe that there is nothing mysterious about either the cause or prevention of disease, that both are subject to natural laws; that the investigating sanitarian is engaged in penetrating the working of nature's laws so far as disease is concerned, and that we are translating the knowledge thus secured into plain, every-day language, and thus laying it before the people—if we can accomplish this, then can we confidently count upon an army of sanitarians 65,000,000 strong, in this country alone.

If any of my hearers will visit one of our public schools when the children are having their lesson in hygiene, I am sure my statement will be believed, that the next generation will be a generation of sanitarians, for the evident pleasure displayed by the "class in hygiene" is proof positive that the study is a congenial and pleasant one to the children. Hence need we have no fear for our children, who are fortunate enough to live in a State where the teaching of hygiene in the public schools has been made compulsory by law. They will grow up with the doctrines of hygiene an integral part of their natures; they will be instinctive sanitarians, so to speak, because, as a logical result of their early training, it will be natural for them to be so. But it is to the active, living, moving, progressive generation of to-day that we must make clear the idea that hygiene is a subject intelligible to, intended for, of practical value to every ordinarily intelligent person. Far from implying a life of asceticism, a life of self-denial, a life devoid of pleasure, we would say that such a life would be directly opposed to the teachings of hygiene, in so far that it would necessitate such an amount of introspection, such a concentration of self-thought upon self, as to make the life of such an individual so much of a care and anxiety to himself that it would, in reality, become a burden not worth carrying.

Let us understand, in conclusion, that hygiene is a word that is intended to name a popular science based upon the laws of nature, an acquaintance with which, and an observance of the teachings of which, will give to us all better health and longer lives. Let us clearly understand that of all popular sciences it is the most popular. Let us clearly understand that boards of health and sanitary organizations can be at the best little more than advisory bodies; that they can, of course, become to a certain extent executive; but that the most complete results may be secured from the science of hygiene, it is necessary for each individual to become familiar with and to practice its teachings. Let us also clearly and definitely understand that hygiene can be understood by and must be understood by the people at large.

A Possible Source of Disease.*

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WHILE feeling the deepest reverence for a custom that has become sacred through time and usage, the writer, after much careful thought on this same subject, was rejoiced to see the full fruition of an innovation, observed in the Scovill Avenue M. E. Church, in Cleveland, Ohio, that of administering the wine of the Holy Communion in small individual glasses. This was the outcome of careful deliberation, and with the full consent of the pastor and laymen and for obvious sanitary reasons.

At this day, scientific investigation has proved beyond the possibility of a doubt that nearly, if not all, of the diseases human flesh is heir to are due to infection by germs. The time is approaching when it will be possible for us to say with assurance that infectious diseases are parasitic diseases, and the proof of our assertion will lie in the fact that bacteria are found on the surface of the human body, and in the interior organs in communication with the exterior. We are forced to account for their presence by two hypotheses: one the spontaneous production of these organisms in the interior of the tissues; the other, their introduction through the membranes from without. The cutaneous surfaces are penetrated with difficulty by germs, but upon the mucous membrane there is little if any delay in their introduction into the system. Under what other circumstances than that sanctioned could one of us be induced to drink from a cup that has been brought into contact with several hundred lips without any pretense of cleansing? The cups used in the communion service are ordinarily of metal, and present edges that are more or less roughened, or that form convenient hiding-places for germs of disease. Think a moment of the importance of this question that now demands the attention of every physician, sanitarian, and scientific man—the role of bacteria in infectious diseases. The unimpeachable nature of experimental proof in this line, when investigation is carefully conducted, is at once made apparent. The germs once implanted, warmth and moisture are the most favorable adjuvants for their rapid development, in fact are essential. There is no doubt that the germs pass into the blood after being introduced by food and drink into the alimentary canal. The multiplication of these germs under favorable circumstances is rapid—almost beyond comprehension. Figures can convey but a vague idea of the rapidity of their growth. "Let us suppose," says Cohn, "that a bacterium divides into two in the space of an hour; then into four at the end of the second hour, then into eight at the end of the third hour; in twenty-four hours the number will amount to more than sixteen millions and a half (16,777,220). At the end of two days this bacterium will have multiplied to the incredible number of 281,500,000,000; at the end of about a week, a number that can only be represented by 51 figures." Now, in order to render these numbers more comprehensible, let us seek the volume and the weight which must result from the multiplication of a bacterium. The individuals of the most common species of rod-bacteria present the form of a short cylinder, having a diameter of a thousandth of a millimetre in length. Let us represent to ourselves a cubic measure of a millimetre. This measure would contain, according to what we have just said, 663,000,000, of rod-bacteria, without leaving any empty space. Now, at the end of twenty-four hours the bacteria coming from a single bacterium would occupy the fortieth part of a cubic millimetre; but, at the end of the following day, they would fill a space equal to 542,570 of these cubes, or about half a litre. Let us admit that the space occupied by the sea is equal to two-thirds of the terrestrial surface, and that its mean depth is a mile, the capacity of the ocean will be 928,000,000 cubic miles. The multiplication being continued under the same conditions, the bacteria issuing from a single germ would fill the ocean in five days.

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* Read before the Northern Ohio District Medical Society, Fremont, O., December 17, 1891.—From the *Columbus Medical Journal*, February, 1892.

Germ-poisons remain active for a long time after escape from the body. The fact that in some cases the germs are absorbed only through abraded membranes and in others through the unbroken membrane, may be explained by the varying diameter of the particles.

Immunity from sources of infection, even in the matter of Holy Communion, can be attained only by scrupulous care and cleanliness. Surely, it is not too sanguine a prediction that the next few years may see the custom which has so long prevailed, and about which so many sacred thoughts cluster, give way to a safer, sanitary plan.

The persistence of the virulence of bacilli has been clearly shown by Klebs and others. A culture in bouillon, kept six months from the light in a closed tube, gave strong, healthy colonies of germs when inoculated into living animals. Sevestre, in "Etudes de Clinique Infantile," cites cases tending to prove the extraordinary vitality of the germs of diphtheria. Lapses of two, and even four years, are not unusual periods for infection from dangerous sources. The subject is one of vital importance from the point of view of prophylaxis. Direct transmission from lip to lip, from sputum, from the hands, clothing, and instruments, has been observed again and again.

We are striving to secure acts of legislature that will limit the spread of the seeds of disease and death. Physicians everywhere, for years past, have petitioned the legislature and urged, by every possible means in their power, the passage of laws that would protect us, in a measure, from contagious diseases. Yet this one source of contagion, the indiscriminate use of the communion cup, has largely escaped notice, and is sanctioned as a custom, because supposed to have been so established by Holy Writ. But Biblical authority does not specify the manner in which the custom is to be observed. We do not read that Christ's disciples partook from the same cup, at the first communion. In St. Luke 22: 17 is this: "And he took the cup and gave thanks, and said, 'Take this and divide it among yourselves.'" There is nothing to justify the inference that all drank from the one cup; rather that each disciple had a smaller cup from which he partook of his portion.

In many of the more contagious diseases, the main changes are found upon the mucous membranes of the lips, tongue and mouth. This is especially true of one disease particularly virulent and disgusting in its forms. Food that has become lodged in the crevices of the teeth, aided by moisture and warmth, create a perfect hotbed for microbes, if indeed such matter itself is not directly poisonous.

There is a well-known list of diseases that are contagious. Healthy persons receive into their systems the germs emanating from those ill with smallpox, scarlet fever, diphtheria, measles, etc., and become sick themselves from the same disease. Persons ill with these diseases reproduce in their bodies the specific germs that caused their sickness, so that exposure to the presence of such is sufficient to reproduce the disease. Convalescent children and adults are sent to church, school or Sunday-school, while they are active centers of contagion. Physicians, through carelessness, often conceal the fact, and are sometimes *particeps criminis* in the results of such concealment. It is in this manner that maladies are allowed to work their fatal effects upon communities. The great trouble is that there seems to be a universal opinion that so long as any one disease does not assume an overwhelming epidemic form, there is no excuse for attempting to limit its spread. Apathetic inaction speaks louder than words, and the responsible parties must either acknowledge it or admit being negligent of the safety of the lives intrusted to them. Upon the same ground—that of infection—promiscuous and indiscriminate kissing is to be condemned. The prevalent habit of kissing children is to be seriously deprecated, as it cannot be questioned that much disease is transmitted in that way. The skin and mucous membranes of infants are very delicate and exceedingly susceptible to poisons that may unconsciously be carried upon the lips of another.

Judge Arnold, of Philadelphia, has decided that it is not necessary for one to kiss a much-handled and perhaps germ-bedecked Bible, when taking oath in his court. He states that it is a relic of idolatry that ought to be abolished; that it was established by the Church to show humiliation of the people before the judges who were clerics, and that the custom has been abolished in England. It is a relic of the age in which trial by fire took the place of trial by jury, when a man's innocence or guilt depended upon his physical capacity to endure pain and torture. But its worst features are the dirt and disease which are imparted to the book by the constant handling it receives by dirty witnesses. The Duke of Fife, when he took his oath at Stratford, had the Testament enveloped in clean white paper.

Medical works are replete with instances of infection from mouth and lips. The man who sips from the communion cup may have a malignant sore-throat, be just convalescent from scarlet fever, or have some dread infectious disease in its incipiency. Can it be safe for the communicant succeeding him to press his lips upon the spot where that one's have pressed? The pertinent question is, has the Church or the individual the right to cause the people to incur this risk at every communion? How the danger—not an imaginary one—can be best avoided, I do not pretend to even suggest, realizing that the solution lies entirely with the pastor and his congregation. Various plans have been proposed, and in several instances at least tried, without arousing any opposition. After all, it is not so much the form of our worship, but "the spirit that giveth life."

I can give in one word the secret of this question and that of the whole of hygiene—cleanliness. If cleanliness be next to godliness, then certainly is there cause for careful consideration of this particular subject.

In many ways the Christian of to-day is a sanitarian. He recognizes the sacredness of the human body—God's highest work. He recognizes the value of human life; that it is a sacred thing, and that he must not commit murder. He is his brother's keeper, and is under sacred obligations to consider his welfare. His rule is the Golden Rule. He is a sanitarian in a more direct way. He is building hospitals and charitable institutions. He is combating crime and degeneracy, and waging war on the diseases that flourish among the poorer classes. He is a sanitarian in that he recognizes the dependence of body and soul, and that he directly benefits the latter when he betters the condition of the former. He is emphatically a sanitarian in that he realizes that public morals and public sanitation are so closely related, have so definite an influence upon the purity of life, that whatever teaches the people cleanliness and the principles of public health directly advances the cause of the Christian religion. Yet in view of all this, in spite of the position he takes upon other subjects, he sanctions the custom of administering the communion wine, either from superstition or a willful blindness to the perils arising from it.

I do not believe that anyone was ever made a sanitarian through fear, but rather by conviction; therefore, in pointing out the possible dangers to health and life that, beyond a doubt, exist in this church custom as now observed, I do not do so with the idea of alarming anyone, but with the intention of familiarizing everyone with the facts as they really exist.

Care of the Teeth.

BY G. W. WILLIAMS, D.D.S.,
Of Germantown, Pa.

FROM the time of their eruption the teeth should be carefully examined by a competent dentist two or three times a year, that irregularities may be avoided or corrected, and all cavities filled before the nerve pulp is exposed and toothache occurs. The temporary teeth (ten in each jaw) should not be neglected, as their premature loss or too long retention leads to irregularity and consequent decay of the permanent set.

The mother should make it a part of her daily duty to cleanse the child's teeth from infancy. The child in this way becomes so accustomed to it that at the age of five or so it will naturally want to cleanse its own teeth, and will not feel comfortable until it has done so. The teeth require special care from the sixth to the eighteenth year, as their condition in after-life depends largely upon the treatment they receive during this period. About the sixth year four permanent teeth (the first molars, often called the sixth-year molars) appear, which are often mistaken for temporary ones and allowed to decay. This should not be forgotten if you desire your children to have a full set of regular teeth.

The teeth should be kept scrupulously clean as long as any remain in the mouth. Tartar should be removed as soon as noticed. There are several varieties of tartar; some are indorous while others are very offensive; some cause decay of the teeth, while all varieties destroy the gums and cause them to recede from the neck of the teeth; also the bony sockets of the teeth are somewhat destroyed. The teeth finally get loose and can often be picked out with the fingers.

There are cases where it has been allowed to remain for years, causing necrosis (death) of the jaw-bone.

After eating, all particles of food should be removed from between and around the teeth. A quill tooth-pick is best for this purpose, floss-silk is also very useful. The teeth should be cleansed with a brush (soft if the gums are tender, moderately stiff if the gums are healthy) on arising in the morning, after each meal, and on retiring at night. Brush from the gums, both inside and out. A suitable powder should be used, not oftener than once a week. Unnecessary friction of the gums should be avoided.

Dentifrices that rapidly remove tartar or whiten the teeth do so at the cost of tooth-structure. The chief causes of decay are lack of nourishment, insufficient or improper use of teeth, crowding, accumulation of tartar, mechanical injuries and various forms of chemical action; strong acids taken as food or medicines, or by the fermentation of food lodged between and about the teeth. Noxious inhalation from indigestible food in the stomach, vitiated saliva, etc., are destructive chemical agents.

The Prevention of Contagion in Consumption.*

BY E. M. SUTTON, M.D.,
Canton, Ill.

TUBERCULIN and cures innumerable for consumption have been tried and found wanting. Let us now direct our attention to the prevention. We have limited the mortality of other contagious diseases. Can we not bring our germicides into use to destroy the deadly bacilli, and so prevent contagious auto-inoculation? I submit that we can, and furthermore it is our duty to do so. The trouble is, we are too intent on the cure and lose sight of the road to prevention.

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* Read before The Military Tract Medical Association, Peoria, Ill., October 20 and 21, 1891.—From the *estern Med. Reporter*.

The following rough family history is suggestive enough to encourage attempts to prevent contagion. Mr. A—— died at the age of forty of consumption, leaving a wife and eight children. The oldest son married, moved away, and is healthy; the third son died three years after the death of his father, at the age of twenty, of consumption; the second son died a year later, at the age of twenty-three, of the same disease; the mother is at present in the last stages of this disease, forty-five years of age; she says that her parents were free from the disease, and her brothers and sisters are healthy. Her health was good until some time after the death of her husband, when she developed symptoms of consumption, and is now expectorating large quantities—more than a pint a day—of tubercular matter. The remaining children of the family are healthy, but the mother told me that a doctor said they would all die with consumption. While getting this history I learned something of the habits of the family, and the use of a coal bucket as a receptacle of the sputum in the day-time, and a dry wash-bowl at night for the same purpose, was one of the worst. This habit, I have reason to believe, began with her husband's illness. No better way for infecting other members of the family could have been found if wanted, and I felt like corroborating the other doctor's statement when I observed one of the children get coal in that bucket, and in replenishing the fire use the poker to scrape out the last bits of coal, tubercular matter and dust, succeeding well in liberating small clouds of the two latter well mixed for inhalation. Some might say that the people are acquainted with the contagious nature of the disease, but they are not. When I told the mother of the danger of such careless habits she was greatly surprised, and at once suggested disinfecting the rooms, and wished to be provided with germicides, which shows that the laity will eagerly grasp any method to prevent contagion when once they learn the truth. It would be interesting to compare the mortality from this disease in the cultured classes with that of the uncultured, both having like environments, as to wealth the former scrupulously clean, the latter positively sloppy. I dare say the mortality is less in the former class. Germicides are mighty and can accomplish more than isolation; therefore, let us make bichloride a household term, and, through the agencies of our Boards of Health, instruct the people how to use it along with good hygiene, then the mortality from this disease will be low in proportion to the amount of dread we can inspire by it as shown by the comparatively low mortality from diphtheria, smallpox and other most dreaded diseases. Many papers are being read on this subject with statistics, pro and con, as to the theory of contagion, but while we wrangle among ourselves consumption sweeps us away; therefore, we must unite to prevent its progress.

Drinking in the German Army.

German military papers publish alarming statistics as to the spread of drunkenness in the German army. In Saxony the consumption of spirits has somewhat diminished, but the diminution is more than made up by the drinking of beer.

THE ANNALS of HYGIENE. ✣ ✣

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EDITORIAL.

Enforced Laziness.

As a means of promoting health and recovering temporarily lost energy, a period of enforced laziness is, we believe, most efficacious. To the active worker, either mental or physical, an absolute rest therefrom, a willing, a voluntary, enforced laziness will prove most beneficial.

To order a man or woman, who is fond of work, to give it up, will produce an amount of fretting and chafing that will greatly negative the good results of the rest, unless, with the injunction to rest, we suggest measures calculated to make the rest congenial.

It is now a well-accepted fact that a short period at the seashore is most conducive to the restoration of the fagged energies of those overworked, and this fact, we imagine, is not a little due to the influence that the seashore atmosphere has in making one willing to be lazy, so to speak. It will be well to bear this fact in mind, for the man who, at home, would fret and fume under the dictum of enforced idleness seems to accept this condition with the best possible grace at the seashore.

The Duty of Parents.

THE most conscientious, loving, honorable, doting parents have not yet come to realize the prime duty that, in the light of present-day science, they owe to their children.

They who voluntarily assume the right to act as agents in the perpetuation of humanity rarely reflect upon the duty they owe to humanity, that their assumed responsibility should be discharged to the best of their ability.

Conscience implies knowledge; for without knowledge of the right, one cannot be conscientiously conscious of wrong; hence can we dismiss from censure those who played their parts faultily in the drama of perpetuation, in the days that are gone, when ignorance of the truth made wrong seem right. Not so to-day; not so when the light of knowledge shows us the dark corners and nooks of wrong.

In the light of our present knowledge, we know that the parents who fail to use this knowledge, that they may give origin to healthy offspring, are but poorly fulfilling their duty to their children, no matter how much care may be bestowed upon their education thereafter. He who exhausts his vitality in the pursuit of wealth, and she who wrecks her physical being on the shoals of society, are but illy fulfilling the duty which nature ordains for them, when, as results of this expenditure on their part, there is but little left to transmit to the offspring.

The so-called prudent man, who toils incessantly that he may lay up wealth for his children, seldom reflects that by this very toil he is robbing his children, yet to come, of the inheritance of vigor to which not only are they entitled, but for which they will be much more grateful to his memory than for all the money wealth that the scheming ingenuity of a parent can provide for them.

Does it not seem frightfully criminal, after one's attention has been turned to the subject, that parents should so neglect to treasure and preserve that which they must transmit as they possess it?

In days gone by the influence of heredity was supposed to be confined to a few particular diseases, consumption standing forth prominently as a type.

To-day we know that just as a parent cares for his physical self, so will his offspring be.

How rarely do we find, in this country, the children of distinguished parents becoming noted for the characteristic traits that have distinguished their parents. Is this accidental? By no means. In this abnormally progressive age a man or woman so uses himself or herself up in the pursuit of that particular attribute with which he may be endowed that there is but little left for transmission; and if this be true of particular mental characteristics, so is it equally true of the general physical condition.

We, of to-day, are so earnest, so full of energy, so untiring, such workers, such drivers in all that we do, that it is to be greatly feared that we are consuming all of our best vigor in every other pursuit save that of perpetuation.

It is a thought to be well pondered. Have we the right to introduce into existence those whom we have doomed to a fettered existence; are parents fulfilling the full measure of their duty, who do not see to it that they are transmitting all possible physical vigor to those whom they are, without the knowledge or consent thereof, calling into being?

He who wastes his money can have but little to will his children; he who wastes his health cannot expect healthy children. Ponder upon the suggestions of these words; they are pregnant with mighty thoughts.

A Sanitary Utopia.

EVER since we first read that admirable address of Dr. Benjamin Ward Richardson, "Hygeia; a City of Health," which we have recently republished in this journal, we have fondly cherished the hope that, some day, the Utopian conception therein outlined would somewhere become a reality.

It would seem, now, that our hope is on the eve of realization.

Recognizing the sanitary advantages with which nature has endowed the locality; recognizing the existence of the fundamental elements of health in good drainage; good water and pure air; recognizing the fact, that for obvious reasons, they would easily secure the active co-operation of the people; the physicians of Atlantic City, N. J., have recently united themselves into an association, that contains in its membership every physician in the city without regard to school, for the avowed purpose (as expressed in the constitution of the association) "of securing, by means of popular education and appropriate legislation, a sanitary condition of Atlantic City that shall approach as near as possible to perfection."

The physicians of this locality have, with remarkable unanimity, earnestly seized hold of the idea that since the present excellent sanitary condition of the city has given it a world-wide repute as a "health resort," they should not be satisfied to "rest on their oars," but that, having accomplished so much, they should stop short of nothing but perfection.

The probably unique spectacle now presents itself of an absolutely unanimously united profession earnestly, faithfully, we might say, enthusiastically laboring to achieve the realization of a Sanitary Utopia.

This association, with the title of "THE PHYSICIANS' PERFECT SANITATION ASSOCIATION OF ATLANTIC CITY," was organized on the 16th of last month, with the following officers for the ensuing year:

President: Joseph F. Edwards, M.D.
Secretary: A. W. Baily, M.D.
Treasurer: Philip Marvel, M.D.

EXECUTIVE COMMITTEE.

Joseph F. Edwards, M.D.; A. W. Baily, M.D.; Philip Marvel, M.D.; Boardman Reed, M.D., and George W. Crosby, M.D.

Upon the foundation already existing it is hoped to erect a superstructure of sanitary refinement and perfection that will ultimately make this famous "health resort" the model sanitary municipality of the world. The task will not be great, for the fundamental elements of sanitation are already so good in this City-by-the-sea that it is only necessary to touch up; to decorate, as it were; to put on the trimmings, and, then, with a watchful eye, to see that everything is kept up to the proper standard.

The Blessing of Faith.

IT is not, at this time, of faith in religion, but of faith in hyiene, that we would write. Those who are of a religious turn of mind rightly feel that there is no blessing equal to that of faith; and with equal conviction do we feel that, from a worldly point of view, there is no blessing comparable to a firm faith in the efficacy of hygiene.

Every day, and every hour of every day, do we see about us such abundant evidences of the results of observance as well as of the neglect of hygienic laws that the faith which has now permeated every fiber of our being is a logical faith, if such can be.

We have gradually evoluted into the firm and unalterable conviction that he who fails to recognize the value of hygiene is either a man who fails to observe the phenomena that are momentarily taking place about him, and to rightly interpret them, or that he is, as the theologians say, a victim of invincible ignorance.

How any impartial, fair-minded, ordinarily intelligent, moderately observant individual can fail to see abundant evidence that disease is preventable, and that a man's health is very much what he makes it, we fail to see; yet such, seemingly, is the fact.

It would really seem that just as religious faith is a gift, so to speak, not always the result of reason, so hygienic faith, while it should be a logical sequence of reason, not infrequently is not so acquired, yet is, in truth, a gift, for which we cannot be too thankful.

If blind, unquestioning, implicit, unreasoning, adamantine religious faith is a gift that secures for its possessor not only mental peace in this world, but an assurance of everlasting happiness hereafter, so, also, does this same firm faith in hygiene vouchsafe to its possessor not only contentment and health in the present, but that serenity of mind which is a not unimportant adjuvant to the acquisition of religious faith.

The time is unquestionably coming, and with rapid strides, when the doctrines of hygiene will meet with universal acceptance, when none will scoff at and ridicule the science so full of promise and realization, but we must confess an anxiety to hasten the coming of this period.

Theoretically disease is possible of eradication; practically it always will exist; yet faith in hygiene, a firm, undoubting faith, a faith that will insure an observance of its teachings, will surely result in reducing the occurrence of disease, both by diminishing the causes and increasing the power of resistance of the individual, while at the same time, when disease does occur, a faith in hygiene will offer to the physician the most favorable and most rational means of cure.

It must be self-evident that hygiene, as a branch of medicine, should be best estimated by physicians, and it is a fact that should go far toward fostering a faith in this science that, the world over, the leading, the most intelligent, the most thoughtful, the most successful physicians are firm believers therein. Let us beg our friends and readers to accept our word for it that if they will, for a while, give themselves up blindly to an observance of hygienic laws, and note, with impartial minds, the results thereof, the faith that we have been writing of will inevitably ensue as the logical result of cause and effect. Try it blindly for a while; the faith will surely come.

Rational Medicine.

In these days of progress, innovation and change; in this period when the railroad has superseded the canal, the electric light has almost displaced gas, machinery does so much of the work of man; when the telegraph, the telephone, the phonograph, the possibilities of aërial navigation, of electro-motors, of biological investigation have nearly revolutionized the lives of mankind, and promise ere long to complete a change so great that, if suddenly viewed by one of the days of 1776, he would fail to recognize the planet in which he once moved and lived and had his being—in view of these wonderful and radical and progressive changes, does it not seem strange that the practice of medicine alone, of all the arts of man, has failed to sympathize with this tendency toward progressive change? In this latter end of the nineteenth century the practice of medicine is, in reality, based upon and conducted upon the same broad principles that guided the art in the days of Galen and Hippocrates. It is true that we know more of physiology and pathology, of bacteriology and microscopy, of the nature of the causes of disease, and of the means and nature of cure; it is true that we now have instruments of precision in diagnosis unthought of by the ancients, and that we are far in advance of all other lines of progress in the almost incalculable multiplicity of articles and means of cure that are being daily, almost hourly, introduced to the public, to be tried for a period, found wanting and discarded. But it is also true that the practice of medicine, the system of practice, as found in the offices of nine hundred and ninety-nine out of every one thousand physicians is the same as that which obtained in the offices of physicians since the beginning of the healing art.

It is a system based upon question and answer; it is an irrational, illogical system; it is a system that, to the thoughtful physician, is extremely unsatisfactory, and that deserves to be superseded by a better one as soon as such can be devised.

That we may appreciate the irrationality of this system, a few dogmatic assertions may be necessary. It is a fact that no one organ or part of the body can be in a state of chronic disease without a more or less marked implication of all other organs or parts.

The intimately close relationship that exists; the absolute interdependence of one part upon another, makes of a human being a complex whole that must be considered as a whole, and not merely as an aggregation of units, of individualities, of systems. We cannot study the nervous system of man as a whole, but must ever bear in mind its dependence upon the digestive and assimilative systems, and its influence also over these very systems upon which it is so dependent.

To be clear: without healthy digestion and assimilation we cannot have normal nervous systems, and without healthy nervous systems we cannot maintain normal digestion and assimilation; without good blood we cannot have good muscles, and without good muscles we cannot have good blood; thus can we go throughout the whole human organism and learn the pregnant fact that, for a healthy whole all parts must be healthy, and that when any one part or organ is deranged, the whole system is thereby also disordered.

Of course, the fact must be recognized, for fact it is, that the departure from the normal state must have a point of origin, and that the course or progress of the unnatural or abnormal process which we call disease must have a center of greatest intensity, and it must be evident that the signs of disease will be, in the beginning, confined to this point of departure, while, as the disease progresses and the whole organism becomes gradually implicated, as a rule the symptoms most prominently noted will be such as are referable to this center of greatest intensity. While true, as a rule, this last proposition does not hold universally good so far as the signs or symptoms that are obvious to the patient are concerned; for it not unfrequently happens that the signs most prominently noted by the individual are those calculated to draw attention rather to a lesser than a greater phase of his abnormal condition.

Thus, for illustration, in that terribly frequent, increasing, insidious affection, "Bright's disease," the signs that are evident to the patient are usually those that would serve to call attention rather to another portion of the body than the kidneys.

Now, then, it is because of the fallaciousness of the attempt to disassociate the various parts or portions of the body, and because of the unreliability of the symptoms obvious to the individual as a true index of the whole condition, that the present system of practice is so illogical.

The very greeting of physician to patient, as the latter enters his office, "What is the matter?" at once reveals the system and its irrationality. A series of questions tending to elucidate the abnormal sensations or conditions; the answer to one question leading up to the next, results in leading the physician's mind toward a conclusion which, if upon physical examination certain corroborative evidences are found, becomes a fixed diagnosis. If, fortunately, the sensations of the patient have led the physician toward the center of intensity, then will he have discovered the most active seat of disease, but he will not have unraveled the whole twisted skein of abnormal processes.

He will recognize his patient as the victim of some organic disease, but he will not have a clear conception of his patient's whole diseased condition.

The system has been faulty and irrational, and the results must be, inevitably, more or less unsatisfactory, for just in proportion as our knowledge of the condition of the whole system is limited must the influence of our curative measures be circumscribed.

It would seem that but little reflection would be necessary to satisfy a thinking mind that the system is irrational and must be unsatisfactory; and the numerous instances wherein one known to be the victim of some organic disease has been suddenly carried off by some other disease, the presence of which has been never even suspected, demonstrate more clearly than words can do the unsatisfactory condition of a system that recognizes the lesser and fails to detect the greater and more dangerous aspect of a diseased condition. It would seem that what we want is to turn the present system of practice upside down and to commence our investigations where now we conclude them.

Rather than to seek a corroboration of obvious signs in physical conditions would it be rational to ascertain, first, physical conditions and substantiate them, if possible, by obvious signs. At present, we examine our patients to find a disease which the symptoms detailed to us have suggested as likely to exist; rather let us, with unbiased minds, approach the human body, and, having ascertained the conditions of its organs and its functions, then let us look for a corroboration of that which we find in the life-history of the patient.

This is "rational medicine." By the aid of our handmaiden, physiology, we know what should be the evidences of healthy action of all the component parts of our bodies. Our knowledge of pathology teaches us how to recognize any deviation from a healthy standard in any of these functions.

The law regards everyone as innocent until proved guilty; as physiologists, we should regard everyone as healthy until, as pathologists, we have proved him diseased. The man who, because of conversation or reading, has preconceived notions of a case in which he may be called to serve as a juryman, is rejected; is it not, then, irrational, to accept the dictum of a physician whose verdict may have been influenced by the previous conversation of his patient? If a jury must convict or acquit solely on evidence, utterly uninfluenced by bias, is it not equally to be expected that the physician should convict or acquit solely upon the evidence offered by a searching inquiry into the condition of his patient, utterly unprejudiced by the oftentimes erroneously interpreted obvious sensations of the individual?

To illustrate: an intelligent gentleman comes to me and says that he does not know he is sick, but that he would like to know something of his physical condition; whether or not he is normal. He then commences to tell me of his obvious symptoms. I interrupt this history and request him to tell me nothing until I have made a careful examination. He then brings me a sample of each of his available secretions and excretions; I examine them; I also make a careful investigation of all his organs and parts and functions, and when this is completed I am in possession of the knowledge that, with a single exception, he is a normal man. I find the specific gravity of his urine too high, and beyond this I note absolutely nothing wrong. Now I am prepared to listen to a recital of symptoms, after I have first asked a few questions. I will not be led up to a conclusion, nor will I have my attention turned toward any particular organ or disease by anything I may be told, because I have already satisfied myself, by a rigid investigation, that no disease exists. There is, however, an abnormal condition (not yet amounting to disease) in this high specific gravity. To what shall I attribute this? Is my patient a great meat-eater? Without telling him why I do so, I ask the question, and am informed that, for years, he has been eating meat (usually beef) three times daily. Here, then, do I find an explanation of the high specific gravity. I have found, first, the condition, and then I have ascertained a practice that physiology tells me will account for this condition.

Now, then, my patient can talk, and he tells me of obvious symptoms that, if related prior to the examination, would have directed my attention toward a functional affection of the heart, a deranged stomach, chronic rheumatism or some commencing brain trouble, according as to which set of symptoms had most impressed my mind in the recital. Now that I have found a condition which has suggested to me a cause, in the excessive consumption of meat, and this suggestion has been verified, and since I am also aware of the fact that this excessive use of meat is capable of explaining all the symptoms that might have been referred to the heart, the stomach, the brain or to chronic rheumatism, now, so armed, I have a clear, concise and rational comprehension of the whole of this patient and can advise accordingly. He has no disease to cure; but he has a condition that will ultimately eventuate in chronic kidney disease if not corrected.

As a result of this system we have, in this illustrative instance, ascertained the fact of vital importance to this individual, that he is doing that which, if persisted in, will result in incurable organic disease, and, without imposing any hardships, we are enabled to suggest measures that are calculated to remove this abnormal condition, and thus avert the ultimate undesired result.

Hence is it that in this rational system of practice we might claim to have combined both preventive and curative medicine.

The glamour of mystery does not surround this system; it is based solely upon "common sense," hence it is doubtful if its universal acceptance be ever achieved; yet it cannot but be admitted by every thinking brain that it is the only true, rational, satisfactory way to practice medicine.

It is a well-recognized fact that a sensitive, imaginative, nervous organization is capable of making its possessor the victim of any and every disease, the symptoms of which may be suggested to him, and it is to this fact that the judiciously advertised nostrums owe their great sales; also does this fact account for the frequency with which the leading interrogatories of the investigating physician meet with affirmative responses.

With "rational medicine," such replies as are due solely to the influence of the question upon the imagination of the patient are impossible. The condition having been first ascertained by an investigation in which the emotions or imagination of the patient have no part, the questions then propounded have a bearing only upon the disordered conditions that we know to exist, and irrelevant replies, that might have been misleading under other circumstances, will receive only their just consideration.

Such, briefly outlined, would seem to be a system of practice in harmony with nineteenth-century progress in other lines, and such a system as, based upon common sense, would result in infinitely more satisfactory conclusions than are now possible of achievement under the empirical system that has been so incomplete, misleading and unsatisfactory for so many centuries.

Eating Air.

According to a missionary in the East Indies, the native of Hindustan recognizes as one of the differences between a dog and a man, the superior breathing capacity of the latter; for example: we say in English, "A dog walks out," and "A man walks out;" but in Hindustanee the expression is, "A dog walks out," and "A man goes forth eating air." The expression is said to be three thousand or more years old, and so its origin must be lost in obscurity; nevertheless it is significant as expressing the importance of air in the maintenance of human life. In a certain sense, air is food; it is, indeed, the most necessary of all substances required by the body. A man can live a month, or even two months, without solid food, and a week or perhaps eight days without drinking, but the vital processes are suspended within a few minutes when the supply of air is cut off.

NOTES AND COMMENTS.

Enemies of Tobacco Smoking.

The ladies of St. Petersburg have organized associations of men and women with this title, the members of which have pledged themselves not to smoke, and to give the money thus saved to the famine sufferers.

Foot-warmers.

Boxes filled with sodium acetate are used in the French railway carriages as heat producers. They are filled with salt in a solid state, which is liquefied by putting the boxes in hot water, and during the five or six hours that it takes to solidify they give out heat steadily.

Epidemics Following the Earthquake in Japan.

The *Sei-I-Kwai Medical Journal* reports that typhoid fever has broken out in the prefectures of Aichi and Gifu, where there was so much destruction by the recent earthquake. It is also reported that simple conjunctivitis is prevailing in those places, and it is believed that the disease is due to the atmosphere being filled with ashes and dust after the earthquake and fire.

Proper Wearing Apparel.

The selection of the proper fabric to be worn next the skin, says Dr. F. H. Bosworth, of Bellevue Medical College, New York, is too often dictated by a consideration of luxury rather than of health. The most important function that goes on in the skin is that by which the body is kept at an equable temperature by means of perspiration. Theoretically, this is accomplished by means of an insensible perspiration; and practically, too, except under extraordinary circumstances, when the perspiration becomes profuse. Now, this function of perspiration, or heat radiation, takes place best when the fabric next the skin is a thoroughly porus one. We have no fabric comparable to pure wool in this respect, the virtues of this fabric being due to the fact that wool fiber is highly elastic, and also curls upon itself in such a way as that, when converted into thread and woven into a garment, it still affords a highly elastic and porus textile fabric which best admits of the escape of heat. Silk probably never would be worn as underwear were it not for the fact that it is the most expensive of the fabrics. From a sanitary point of view its use is very objectionable, in that cutaneous transpiration is interfered with. The same is true of cotton and linen, in that their fiber is perfectly straight, and is also elastic.

Cremation in Berlin.

The city of Berlin is about to erect a crematory in the Friedrichsfeld cemetery, where the bodies of unclaimed paupers as well as the remains of the dissecting-room are to be burned. There are about a thousand bodies dissected every year. To popularize the practice of burning the dead, the Berlin Society for Cremation has petitioned the Parliamentary Commission on the Civil Code that the choice between burial and burning be granted hereafter to every German citizen.

A Bore-Bell.

A Cincinnati physician has a secret office-bell, which he calls a "bore-bell," and he says it is a great thing. When he is tackled by a bore, or when his lady visitors insist upon giving him the history of all their relatives and their ills, the doctor's foot suddenly touches a spring, which rings the "bore-bell," and in rushes a messenger with an important message or telegram. The visitor's tedious tale is interrupted, and she or he leaves the office because the doctor is so busy you know. The same message or telegram can be used a great many times, and the doctor's callers never suspect anything.

The Physical Training of Boys.

Boys of to-day have great advantages in their physical training over those of even ten years ago. It is easily within the remembrance of those of us who have not been out of college so very long, how the mere mention of football at home brought down a storm of parental wrath, while unrelenting prohibition followed us back to school. The game was then an enigma, and the newspapers added horror to the mystery by printing their accounts of matches in a manner calculated to chill the blood of any well-regulated household.

Gradually, as the sons induced their parents to view the sport themselves, the prejudice wore away. The game finds favor in schools from Maine to California, and the result is a generation of lads growing up whose physical beauty and healthful condition put us of the last generation to shame. Our very sixteen-year-old stripling can outrow, outrun, outswim, outride and outdrive us; give us points on football, baseball and tennis, and, happily devoid of that sickly pallor peculiar to the student of our day, knows quite as much, with the ruddy glow of health in his cheeks. And yet there are to be found some few that do not favor athletics for boys! The glorious influence for good that sports have on the general education and welfare of both boys and girls has not begun to be appreciated. When I see a boy who does not take his play-hour, I regard him with as much disquiet as the man who never has a kind word for anyone. Play is as necessary to the boys and girls as water is to a plant. Without it the growth of the one is restricted and unhealthful, while the other, having fewer resources, dies.—*Harper's Weekly.*

Be Cheerful.

I give you the precept for just what it is worth, as I would recommend to you to be six feet, or at least five feet ten, in stature. You cannot settle that matter for yourself, but you can stand up straight, and give your five feet five its full value. You can help along a little by wearing high-heeled shoes. So you can do something to encourage yourself in serenity of aspect and demeanor, keeping your infirmities and troubles in the background, instead of making them the staple of conversation. This piece of advice, if followed, may be worth from three to five years of life to you.—*Dr. O. W. Holmes.*

Giving up a Brutal Custom.

Steel caskets for the bodies of those who die suddenly on shipboard are being carried on many of the transatlantic liners. The remains are placed in them and hermetically sealed. The heartless practice of throwing the remains overboard is considered worse than barbarous, especially when a vessel is within a few miles of land. Besides, when weighted, they only sink a few feet below the surface of the water, where they are soon attacked by the fish and sharks, or reappear upon the surface of the water within forty-eight hours. The body of the wife of a rich New-Yorker, thrown overboard from a Vera Cruz steamer a few months ago, drifted ashore on the coast of Mexico, and was seen for months afterward, until robbed and sunk by bandits for the finger-rings.—*Philadelphia Record.*

The Couch.

A room without a couch of some sort is only half furnished, says an exchange. Life is full of ups and downs, and all that saves the sanity of the mentally-jaded and physically-exhausted fortune-fighter is the periodical good cry, and the momentary loss of consciousness on the upstairs lounge, or the old sofa in the sitting-room. There are times when so many of the things that distract us could be straightened out, and the way made clear, if one only had a long, comfortable couch, on whose soft bosom he could throw himself, boots and brains, stretch his weary frame, unmindful of tidies and tapestry, close his tired eyes, relax the tension of his muscles, and give his harassed mind a chance. Ten minutes of this soothing narcotic, when the head throbs, the soul yearns for endless, dreamless, eternal rest, would make the vision clear, the nerves steady, the heart light, and the star of hope shine again.

There isn't a doubt that the longing to die is mistaken for the need of a nap. Instead of the immortality of the soul, business men and working-women want regular and systematic doses of dozing; and after a mossy bank in the shade of an old oak, that succeeding Junes have converted into a tenement of song birds, there is nothing that can approach a big sofa, or a low, long couch placed in the corner, where tired nature can turn her face to the wall and sleep and doze away the gloom.

Regulation of Hypnotism in Belgium.

The first land which has undertaken the legal regulation of the practice of hypnotism is Belgium. A few days ago the legislature adopted a law which, in all probability, will serve as a model for the legislative action of other countries. It declares that anyone who exhibits publicly a person hypnotized by himself or others will be punished by imprisonment ranging from two weeks to six months, and be fined from $5 to $200; that anyone not in possession of a physician's diploma who hypnotizes a person under twenty years of age, or not in the full possession of his faculties, will be punished by imprisonment and fine, whether the subject be exhibited or not; and that anyone who allows a hypnotized person to sign a document or other paper, whatever its nature, with the object of fraud, will be punished by imprisonment. The same penalty threatens a person who attempts to use a document signed by one while hypnotized. The people of Belgium have welcomed the adoption of the new law.

Man's Relative Height and Weight.

A man five feet one inch should be 120 pounds.
Five feet two inches should be 126.
Five feet three inches should be 133.
Five feet four inches should be 136.
Five feet five inches should be 142.
Five feet six inches should be 145.
Five feet seven inches should be 148.
Five feet eight inches should be 155.
Five feet nine inches should be 162.
Five feet ten inches should be 169.
Five feet eleven inches should be 174.
Six feet high should weigh 178.

Vital Statistics of New York City.

The population of New York on July 1, 1891, according to the estimate of the Board of Health, was 1,680,796; that on July 1, 1890, 1,631,232. The number of marriages reported in 1891 was 15,764, as against 14,992 in 1890. The number of births was 46,804, as against 39,250 reported in 1890; of deaths, 43,634, 18,225 being of children under five years of age, the number in 1890 having been 40,230. The death-rate of New York was 25.96 in 1891; in 1890 it was 24.66. The principal causes of death were: Pneumonia, 5,817; consumption, 5,160; diarrhœal diseases, 3,585; Bright's disease, 2,503; heart diseases, 2,287; violence, 1,957; bronchitis, 1,834; diphtheria, 1,363; scarlet fever, 1,221; influenza, 858. Three cases of leprosy were reported; 201 unknown dead were removed to the Morgue, and of these 92 were subsequently identified; 132 people were reported to the police as missing, but all except 8 were found; 192 persons were arrested for attempted suicide.

Tuberculosis in Prisons.

A German authority has recently investigated the remarkable frequency of consumption, or pulmonary tuberculosis, among prisoners. It was found that nearly one-half of all the deaths which occur among the inmates of German prisons is due to tuberculous disease, the mortality from this disease, between the ages of 20 and 40 years, being five times as great as among the general population. Doubtless the disease exists prior to confinement in many cases, but the conclusion is irresistible that in a great majority of cases the disease is contracted by infection from cells which have not been properly disinfected.—*Good Health.*

Airing Clothing.

When taken off at night, each article of clothing should be hung where it will air. Especially should this be the case with outside garments, such as coats, dresses, skirts, etc., which cannot be subjected to washing. Even hose (which are oftener than any other way thrown in a careless heap on the floor), when not convenient to change, ought to be carefully turned and hung on a chair. This will divest them of the cold, clammy feeling common to hose which have been worn for several days. No garment should ever be taken off and put away in the closet without first being hung for a short time where a good stiff breeze will blow through it.

If these rules were followed, and if the occupants of crowded stores and street-cars were, as a contemporary truly says, "more careful to take off and air their coats, cloaks and dresses, upon returning home, contagious diseases would be held within stricter bounds," for the goods of which the garments are made are usually an excellent medium for the dissemination of the germs of all communicable diseases.

Always Well at Our House.

There is a hint worth heeding in the reply of a little child who, when asked if the family were all well, answered, with an innocent show of surprise, "Why, yes, we're always well at our house." Evidently he came from a home in which ailments and symptoms of disease were not the chief topics of conversation. It is distressing to see how overanxious mothers develop in their children excessive thought concerning the condition of their bodies by constantly talking about their small aches. One brilliant boy, whose fond mother had a habit of asking every morning when he came down to breakfast, "Do you feel quite well, dear?" conceived the clever idea of unscrupulously saying, "No, mamma," as an easy way to get rid of going to school. When a child is really ill, there should be no lack of sympathy or prompt attention to his needs. Even then, however, it is desirable to call his attention away from his pain and not to it. But in case of the ordinary cuts and bumps and bruises and incipient illness common to childhood, encourage him to bear his pain manfully and forget it quickly.—*Congregationalist.*

Talmage on Cremation.

Scientific journals, writes T. De Witt Talmage in his department in the February *Ladies' Home Journal*, contend that our cemeteries are the means of unhealthy exhalations, and that cremation is the only safe way of disposing of the departed. Some have advocated the chemical reduction of the physical system. I have, as yet, been unable to throw myself into a mood sufficiently scientific to appreciate this proposal. It seems to me partially horrible and partially ludicrous; I think that the dead populations of the world are really the most quiet and unharmful. They make no war upon us; let us make no war upon them. I am certain that all the damage we shall ever do in this world will be while we are animate. It is not the dead people who are hard to manage, but the living. Some whistle to keep their courage up while going along by graveyards; I whistle while moving among the wide-awake. Before attempting this barbaric disposal of the human form as a sanitary improvement, it would be better to clear the streets and "commons" of our cities of their pestiferous surroundings. Try your cremation on the dogs and cats with extinct animation. I think Greenwood is healthier than Broadway, and Laurel Hill than Chestnut Street, Pere la Chaise than Champs Elysées. Urns with ashes scientifically prepared may look very well in Madras or Pekin, but not in a Christian country. Not having been able to shake off the Bible notions about Christian burial, I prefer to adhere to the mode that was observed when devout men carried Stephen to his burial.

Undertaking as a Nuisance.

The question whether undertaking and embalming is a nuisance came up for consideration a short time since in New York City, in the case of a large and well-appointed establishment located right in the center of the most fashionable neighborhood of Murray Hill. The property where the undertaking establishment was placed had been restricted by deeds from previous owners against any business which might be offensive to the neighbors, such as factories, stables and any kind of a nuisance, and suit was brought for injunction on the ground that this restriction applied to the business of undertaking and embalming.

A large mass of testimony was taken on both sides, and that given in behalf of the defendant was to the effect that the business was cleanly, well-conducted, and not offensive. The manager of the company even went so far as to say that he would rather attend a funeral than a wedding. The court decided, however, that the restrictions on the property covered the business of undertaking, and delivered the following opinion: "While every advance in science is hailed with delight, popular opinion has not yet reached the belief that the general good requires that private corporations or individuals shall for gain, or from motives of philanthropy, open dead-houses in fashionable or thickly populated parts of the city, or where autopsies are held, or where dead bodies are cut up and stored, or where funerals are furnished without regard to number whenever required. Cremation in the city would be as readily tolerated.

"All of these things are good in their places, but offensive everywhere else. Dead-houses, morgues, dissecting-rooms and establishments for autopsies or for the reception of dead bodies, have no place in a city like New York, and if tolerated should, for sanitary and other reasons, be permitted only along the water fronts, or in some out-of-the-way place so far removed from habitation as not to offend the amenities of life, and to be absolutely free from all harmful influence."—*Cleveland Medical Gazette.*

Occupation for Old People.

When people get old, the question as to what shall be their occupation may be more important than it has been at any previous period of their lives. They may only stay out their existence with the consciousness that they are superannuated members of society, who have fallen out of the procession which is marching along with the progress of the world, and been left behind to die, as beasts and savage tribes of men abandon the exhausted of their numbers.

Such old people, pitiable in their decay, may be sustained by appropriate regard, but they do not represent the true dignity of age. They have dropped behind when they might have gone ahead. They have accounted themselves supernumeraries in society when really they might be among its important and useful factors, if they would only forget their age as measured by years alone. They have put themselves on the retired list when they are still fitted for active service. Their faculties fall into decay simply because they do not exercise them. No matter how young a man may be in years, he can produce for himself the same unfortunate result in the same way.

Physicians can report many cases wherein are manifested all the symptoms of age at the very beginning of manhood, and so also they can point out examples of physical and intellectual youth even at a period exceeding the psalmist's limit of life. Run through history yourself, and more especially the history of our own time, and you can make out a long list of men distinguished in statesmanship, science, literature and the church, whose intellectual prowess has been displayed up to fourscore years and beyond.

They would not grow old; they would not allow themselves to be counted out of the world of thought and accomplishment. They remained in the competition to the last. Life was not mere animal existence for them after they had passed the limit where conventional age begins. Longevity did not bring rest, for they kept the intellectual machine bright with the friction of continued use. It simply gave them time to learn more, and to do more, with the advantage of a training and an experience so much prolonged.—*Good Health.*

The Source of Half the World's Unhappiness.

"The longer I live," said Sydney Smith, "the more I am convinced that half the unhappiness of the world proceeds from little stoppages, from a duct choked up, from food pressing in the wrong place, from a vexed duodenum or an agitated pylorus. My friend sups late; he eats some strong soup, then a lobster, then some tart, and he dilutes these esculent varieties with wine. The next day I call upon him. He is going to sell his house in London and retire into the country. He is alarmed for his eldest daughter's health; his expenses are hourly increasing, and nothing but a timely retreat can save him from ruin. All this is the lobster, and when overexcited nature has had time to manage this incumbrance, the daughter recovers, the finances are in good order, and every rural idea is effectually excluded from the mind. In the same manner old friendships are destroyed by toasted cheese, and hard salted meat has led to suicide. Unpleasant feelings of the body produce corresponding sensations in the mind, and a great scene of wretchedness is sketched out by a morsel of indigestible and misguided food."—*Good Health.*

The Risks of Leather Workers.

There is a process of softening the leather used for saddlery which is very injurious to the health of the workmen engaged in the craft. M. Etienne Ferrand, of Lyons, has recently brought forward proposals for remedying this evil. After the leather has been tanned, but prior to its being rendered supple, and before it is scraped and polished, grease has to be rubbed into the pores. The entire skin, before it is cut, is heated and thoroughly dried in a stove. The skin is then spread upon a table, and tallow at a temperature of about 259° C. is poured upon the leather. The workmen rub this melted tallow into the pores of the skin. But the tallow when heated to this extent gives off acrid vapors, which irritate the respiratory organs, and occasion much suffering to the workmen. This is due to the presence of acroleine in the vapors, produced by the decomposition of the glycerine. The acroleine, when coming in contact with the air, forms acrylic, acetic, and formic acids, and is readily volatile at ordinary temperatures. A few drops of acroleine volatilized in a room will render the atmosphere almost insupportable. For this reason, workshops and factories where leather for saddlery is made are put by the French Legislature in the second category of unwholesome industries. M. Ferrand proposes that, instead of rubbing superheated tallow into the skins by hand labor, the skins should be placed in stoves with tallow maintained just in a state of liquefaction—namely, from 100° to 120° C. No irritating vapors would then be produced. If it was found that the liquid tallow did not sufficiently permeate the skins, the rubbing by hand could be replaced by rollers or other methods of bringing to bear mechanical friction. M. Ferrand touches, however, upon the real difficulty when he suggests that tallow costs 80 c. the kilogram, and leather 3 fr. 50 c. the kilogram. By the hand process the workmen are able to introduce so much tallow that the grease in the leather represents from 35 to 45 per cent. of the total weight. For doing this the workmen receive a supplementary wage of 3 fr. per day, which, added to their ordinary wages of 5 fr. a day, makes a very considerable difference. Doubtless if some such method as that suggested by M. Ferrand were applied, good leather could be made without any inconvenience or risk to health. But the leather, though equally strong, would not be so heavy, and the workmen would lose their claim to a supplementary wage. Therefore both employers and workmen are opposed to the more wholesome process. M. Ferrand is more likely to be supported by the trade when he urges that in any case there should be, by the side of the workshop where the tallow is rubbed into the leather, a spare room, well warmed and ventilated, where the workmen could seek rest and fresh air between each operation. To this the workmen at least would not object, but the employers would probably complain of the extra expense involved. It seems deplorable that the health of the workmen should be gravely compromised for the sake of increasing the weight of the leather by forcing into the pores more grease than is necessary.—*The Lancet.*

The City.

One of the creations of man on the earth is the city. A city is a purely artificial arrangement. For good or bad a city must be built. In the first ages cities were built in conformity with the "lay of the land." If there was a hill nobody presumed to interfere with creation, and the city climbed by steep and devious ways; if there were hollows the city descended into the depths and took the consequences of storm and flood. The filth that accumulated was left to the rains or to itself. For ages the word "city" was linked with dirt and pestilence. Every man built as he pleased. The noble built his palace, beside its walls crouched the hovel of the beggar, and both noble and beggar were buried under the floor of the church, or in the churchyard in the midst of the city, till there were cemeteries like Bunhill Fields in London, where it is said that in a space of four acres 100,000 persons have been buried.

As time has passed, the art of city-building has progressed, but the builders have been divided into two classes, one of whom might be distinguished as the "natural" and the other the "progressive" school. The first take it as settled that the "old town" must stay an "old town," that the old plan was handed down from above, and must be adhered to. What dangers and discomforts accumulate naturally with population, "plague, pestilence and famine," must be endured. The strong bulwark and shield of this class is municipal economy. Dirt and death are natural and economical, so let them be perpetuated and encouraged.

The class taking the opposing view—that beauty, comfort, decency, safety, are worth all that they can honestly be made to cost, and who would build cities on that principle—is to gain the ascendancy, especially in the new cities of the New World. If there are natural difficulties, these city-builders reason, they must be removed; if the hill is obstructive and unsightly it must be cut down; if the water settles in the low ground there must be filling and sewerage; if man has built badly and the street is too narrow it must be widened; if parks are needed they must be opened (and the example of the Central Park in New York shows what natural obstacles may be overcome); if trees are lacking they must be planted; if pure and abundant water is not obtainable near at hand it must be brought from afar.

It has been said on high authority that a modern city house, supplied with water, light and all the modern conveniences, in the midst of a well-paved and sewered and lighted neighborhood, is the best residence yet devised by man. It is to the standard of such a house that the whole cities will be brought, provided the counsels prevail of those who believe that to the task of municipal government, direction and construction, men should bring the best their hearts and brains afford.—*Kansas City Star.*

SPECIAL REPORTS.

State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania.

PRESIDENT,

J. H. McCLELLAND, M.D., of Pittsburg.

SECRETARY,

BENJAMIN LEE, M.D., of Philadelphia.

PEMBERTON DUDLEY, M.D., of Philadelphia.

J. F. EDWARDS, M.D., of Philadelphia.	GEORGE G. GROFF, M.D., of Lewisburg.
J. H. McCLELLAND, M.D., of Pittsburg.	S. T. DAVIS, M.D., of Lancaster.
HOWARD MURPHY, C.E., of Philadelphia.	BENJAMIN LEE, M.D., of Philadelphia.

PLACE OF MEETING,

Supreme Court Room, State Capitol, Harrisburg, unless otherwise ordered.

TIME OF MEETING,

Second Thursday in May, July and November.

State Board of Health.

THE Twentieth Regular Meeting of the Board was held at the Supreme Court Room, Harrisburg, Nov. 12, 1891, at 4 P.M.

Present: Dr. J. F. Edwards, Dr. Pemberton Dudley, Dr. Geo. G. Groff, Mr. Howard Murphy, C.E., and Dr. Benjamin Lee, Secretary.

Dr. Lee moved that, in the absence of the President, who was still in Europe, Dr. J. F. Edwards take the chair. The motion was carried.

The Secretary read a telegram from Dr. S. T. Davis, regretting his inability to attend.

The minutes of the Nineteenth Regular Meeting, held at Harrisburg, July 9, 1891, were read and approved. The minutes of special meetings, held at Philadelphia, Aug. 31, 1891, and Oct. 24, 1891, were also read and approved.

(1) The Report of the Secretary being in order as its first item, the Secretary read his Seventh Annual Report. It was accepted and approved with the thanks of the Board, and in connection with the minutes of the Board for the past year, ordered to be forwarded to his excellency the Governor as the Annual Report of the Board.

The recommendations occurring in the course of report were ordered to be brought up under the head of new business.

The Board now adjourned, to meet at the Supreme Court Room, at 8 o'clock P.M.

The Board reconvened at 8.30 o'clock the same evening. The report of the Secretary being still in order, the following items were presented:

(2) The circular on precaution against sunstroke had been printed and partially distributed since the last regular meeting; also circular No. 33, School Hygiene No. 2, on the construction, ventilation and management of schools, addressed to school directors, controllers and trustees. The Chairman of the Committee on Water Supply, Drainage, Sewerage, Topography and Mines had handed the Secretary a newspaper extract from a recent report of the French Academy of Medicine stating the length of time during which patients recovering from contagious disease were liable to communicate these diseases. The periods assigned agree closely with those fixed in this circular, in no instance being longer, but in certain diseases being shorter.

(3) A report of the prevalence of diphtheria at Glen Riddle, Delaware County, has been made to the Board. After investigation Medical Inspector Atkinson reported cases at the railroad station. There had been several previous cases of sickness in this house, the sanitary conditions of which were found to be very imperfect. There was evidence of leakage from the walls into the cellar, and the drainage from the roadway passed under the kitchen floor, the level of which was below that of the road. The General Manager of the railroad company had been addressed upon the subject, and had written, promising that no steps should be spared to properly disinfect the house and rearrange its drainage.

(4) A complaint that, owing to defective drainage, stagnant water from a canal bed filled cellars and thus caused much sickness and damage to property at Weissport, Carbon County, had been made by several citizens of that borough. A communication was addressed to the President of the Lehigh Coal and Navigation Company. This officer, while considering that the nuisance was principally caused by parties having placed a dam across the Lehigh River at this point, promised to open a drain and thus prevent leakage from the canal bed.

(5) At the request of the Secretary, his Excellency the Governor had issued a commission appointing the President of the Board, Dr. J. H. McClelland, a delegate from the Commonwealth of Pennsylvania to the International Congress of Hygiene and Demography, to be held in London, August 7 to 14, 1892. The Secretary had also issued Dr. McClelland's credentials from this Board to the same body, and had notified Dr. John S. Billings, of Washington, D. C., and Prof. W. H. Corfield, Hon. Foreign Secretary of the Congress, of such appointments. The action of the Secretary in this matter was referred to new business.

(6) The attention of the Board has been drawn by Mr. R. R. Bentley, General Baggage Agent, Pennsylvania System, west of Pittsburg, to the action of the Ohio State Board of Health, which had recently prohibited the transportation of bodies dead of diphtheria. The Iowa State Board of Health had previously taken similar action. It was for the Board to decide whether it should amend its regulations in the same way. The matter was referred to new business.

(7) An investigation into the cause of typhoid fever at Millville, Columbia County, had disclosed the fact that a spring at the bottom of a hill near the residence of a physician was being contaminated by cesspool matter from a disused well on his premises, used as a cesspool. The cases of sickness had occurred among train hands and others who had drunk from this spring, which the Secretary at once ordered closed, in accordance with the recommendation of Dr. Leiser, Medical Inspector.

The subject of the increasing use of disused wells as cesspools throughout the State was ordered to be brought up under new business.

(8) A complaint that scarlet fever prevailed at Shippensburg, Cumberland County, had resulted in an inspection of that borough by Medical Inspector Sibbet. He reported about fifty cases of scarlet fever, also several cases of typhoid fever. He found the borough in a bad sanitary condition. He had attended a meeting of citizens, and urged the necessity

of abating the privy nuisance by the purchase and use of an odorless excavator, the free use of disinfectants, the appointment of a sanitary committee, the abatement of pig-pen, table, and slaughter-house nuisances, and the closing of all wells within one hundred feet of any such places. He also caused handbills to be issued containing the above suggestions. The Secretary had communicated with the Burgess, fully indorsing all these recommendations.

(9) Diphtheria had again prevailed somewhat seriously at Bangor, Northampton County, six cases out of eight having terminated fatally. Circulars were sent and suggestions made to the Board of Health, which were suitably acknowledged by Dr. Buzzard, the President.

(10) The Board of Health of Carbondale had complained recently of their inability to enforce the sanitary laws of that borough, especially in regard to drainage, and asked for advice. The Secretary instructed Medical Inspector Taylor to visit Carbondale and confer with the Board. He reported great progress in sanitary matters since his visit in 1888, brick pavements having been laid in the center of the town, and about 16,000 feet of sewers having been constructed. The great need of the city was a complete system of sewerage. The Secretary had written to the Board of Health, pointing out that the power to order the sewerage of a city and to provide the necessary appropriations were vested solely in Councils, also indorsing the recommendations of the Medical Inspector.

(11) Information had been received from one of the physicians of St. Clair, Schuylkill County, to the effect that a nuisance was being created by a blocked-up sewer. The Secretary notified the borough authorities of this matter, and a reply was received that the nuisance should receive speedy attention.

(12) A complaint that filth from a tannery and a creamery was being run into Martin's Creek, at Nicholson, Wyoming County, had been received, and was investigated by Medical Inspector Taylor. He found that the nuisance had been partially abated since the report had been sent to the Board. He, however, suggested that the pipe from the creamery be lengthened, and that the liquid in which the hides are soaked at the tannery be emptied into Tunkhannock Creek, about three-eighths of a mile away. The Secretary wrote, advising these suggestions to the owners of the creamery and tannery, who promised that prompt attention would be given to the matter.

(13) A communication from the Hon. L. R. Keefer requested an investigation into the cause of typhoid fever at Cressona, Schuylkill County. Dr. W. Murray Weidman had inspected Cressona, and found ground for suspicion that several of the wells were polluted. He had conferred with the committee appointed to investigate, and had submitted several of the suspected waters for analysis, advising the closing of every well the waters of which were found contaminated. An analysis of seven different samples was made under the direction of the Board, showing serious contamination of certain wells, which were ordered closed. Eventually the epidemic was brought under control.

(14) The continued obstinacy of Mr. Peter Hermes, of Bulger, Washington County, to abate the nuisance at his cheese factory, had caused the Secretary to threaten him that legal proceedings would be instituted. He had replied, denying that any nuisance existed, his letter being now read. In the event of his failure to comply with the Board's orders, the Secretary had advised him that the District Attorney would commence proceedings.

(15) The Secretary's attention had been called to the fact that a portion of Camp Sherman, at Devon, had been located on marshy ground near a contaminated water-course. This had been pointed out to the commanding officer, and that portion of the camp was promptly removed to higher ground. A complaint was received, shortly after the close of the encampment, that large quantities of garbage and cesspool matter had been left exposed and were creating a serious nuisance. On inspection the Secretary and Dr. Atkinson found that all this matter had been, just before their visit, covered with fresh earth, and no cause for further complaint existed.

(16) At the request of Mr. Frank Smith, the Secretary and Medical Inspector Atkinson had inspected the new sewerage system of Wayne, Delaware County, on August 8th. They were accompanied by Colonel Waring. The system, which might be termed one of fil-

tration and aëration, did not appear to be working perfectly, but it was claimed that all impure matter was separated from the small amount of water which entered Itham Creek, and it was expected that this entrance would soon cease entirely.

(17) An epidemic of dysentery had prevailed at the Norristown State Insane Asylum during the past summer. On request Dr. Robt. H. Chase, Superintendent, made a report showing that forty-two cases had occurred, of which thirty-seven had recovered, three had died, and two were still under treatment. The disease had been confined, with the exception of two cases, to the insane inmates of the asylum. The cause of the dysentery was not definitely discovered; it was, however, most prevalent in the crowded parts of the institution. A deficiency in the water supply had also occurred, interfering with the proper flushing of the closets.

(18) The members would recall the fact that a complaint was received during the last meeting of the prevalence of typhoid fever at Bitnerville, Lancaster County, and that an investigation was ordered. Medical Inspector Hartman reported that the cesspool matter from nineteen cottages was carried into an open trench about eighty yards back, where it remained, the stench from this trench being most offensive. He recommended that the owner (Mr. Bitner) cover this trench, and provide properly-constructed cesspools for these cottages, which the Secretary advised Mr. Bitner to have done. Subsequently, on notice from the complainant, Dr. S. T. Davis made two further inspections of the place, and reported that the neglected matters had been attended to by Mr. Bitner, and no further cause for investigation by the Board was needed.

(19) A nuisance caused by the slaughter-house at Tullytown, Bucks County, had been investigated by Medical Inspector Atkinson. He reported everything around the slaughter-house in a very unsatisfactory condition; pigs fed on offal and blood, no drainage whatever, and foul odors constantly arising from the place. He recommended the removal of the place outside Tullytown, which the Secretary at once ordered. Subsequently the owner and tenant of the premises waited upon the Secretary and agreed, in a sworn affidavit, to cease feeding hogs on offal and blood, to cement the floor, remove the pig-pen, and clean up the entire premises if allowed to remain. On these terms the Secretary allowed the slaughter-house to remain.

The Board now adjourned, to meet at 9.30 A.M., on the 13th inst.

The Board reconvened at 9.30 A.M. on Friday, the 13th inst; the Secretary's report was continued as follows:

(20) Application had been made by prominent residents of Washington, Washington County, for assistance in the formation of a local Board of Health. Medical Inspector Thompson was instructed to visit the town and confer with the petitioners. He reported Washington to be well sewered and supplied with ample waterworks. Only one-fourth of the people had, however, begun to use this water. There was much fear of contamination of wells from cesspools. Nine cases of typhoid fever were reported. Documents for establishing a local board were sent to the citizens, and the entire discontinuance of the use of well-water was strongly urged.

(21) A complaint that diphtheria was prevalent at Lenni, Delaware County, was investigated by Medical Inspector Atkinson. He reported that little ground for complaint existed, diphtheria being present in but one instance. Two cases of typhoid fever existed. A reported stagnant pond was found to be fed by a spring and to have two outlets, and did not appear to be the cause of any sickness. The teachers and directors of the schools were seen, and all agreed they had no cause for complaint.

The nuisances at Riddle's Mills, however, reported during the previous epidemic, had not been remedied, and the Secretary had urged the owners to give the subject immediate attention.

(22) On request of citizens, Dr. L. H. Taylor had made an inspection of Forest City, Susquehanna County. He reported finding the city in a most deplorable condition as regards situation. The filth from privy-vaults and house-drains in hundreds of instances ran down through the yards of houses situated on lower ground. There was no system of sewerage

whatever, the drainage from privies running into open gutters in the street; in many places this accumalated and remained stagnant, producing noisome stenches. In some few instances, where privy-vaults were found, they were full to overflowing, and nuisances were abundant everywhere. No successful attempts had been made by Council to abate these nuisances. From twenty to fifty cases of typhoid fever had existed in two months. The Secretary had strongly pointed out the dangers of this wretched condition of affairs to the Council, and endeavored to dissuade that body from allowing political questions to interfere with their duties as regards sanitation.

(23) The Board of Health of Schuylkill Haven had asked for the co-operation of the Board in removing certain dangerous nuisances in that borough. Medical Inspector Weidman had inspected the locality complained of. The Secretary had advised the local Board, in accordance with Dr. Weidman's recommendations, and the Board has undertaken to carry out the suggestions.

(24) In consequence of information from the Burgess of Tyrone, Blair County, respecting the prevalence of diphtheria, Dr. Groff had visited that borough, and had conferred and advised with the Burgess and other prominent citizens. The Secretary had also communicated with the Burgess, recommending the ordinance requiring physicians to report all cases, the issuing of a proclamation, the distribution of circulars, and placarding of infected houses. The progress of the epidemic was checked.

(25) Information had been received from Police Surgeon Andrews, of Philadelphia, that scarlet fever prevailed at Howelville, Chester County. This was investigated by Medical Inspector Atkinson. He reported many nuisances, especially caused by filthy immigrants. The Pennsylvania Railroad Company, the owner of the quarry works and others were written to and urged to co-operate in remedying these insanitary conditions.

(26) The deposit of large quantities of offensive and putrifying manure at Ardmore Station, P. R. R., had been strongly complained of by a prominent physician. The Secretary had communicated with the railroad company, advising that the transportation of the manure be either postponed until cold weather, or some other point be selected for its deposit, with the result of the immediate cessation of the grievance.

(27) A serious condition of affairs resulting from the pollution of the subsoil by drainage and sewage had been reported at Wallingford, Delaware County. The inspection by Dr. Atkinson revealed the fact that the ground was saturated with sewage matter in all directions, every man draining on to his neighbor's property, or into his neighbor's well. Owing to the action of the Secretary, the nuisance complained of (which led to the discovery of this condition) was being promptly abated; but unless this deplorable absence of all sanitary provision were remedied in this, as in all other suburban districts, he apprehended grave results in the near future. In this case four inspections had been made. By his advice, the residents were uniting to form a Sanitary Protective Association and adopt regulations regarding the drainage and other matters affecting the health of the neighborhood. He would suggest the issue of a circular recommending the formation of such associations throughout the State.

Referred to new business.

(28) A complaint that the water supply of Lebanon was being polluted had been investigated by Medical Inspector W. Murray Weidman. He found possible cause for contamination from the fæces of workmen who were constructing the dam where it was alleged the pollution occurred. The results of the inspection were sent to the complainants, who were the publishers of a daily newspaper in Lebanon.

(29) A report of the prevalence of typhoid fever at Shanksville, Somerset County, asking for an inquiry into the cause, resulted in Medical Inspector J. S. Hackney being instructed to inspect the town. He reported the sickness to be malarial, and not true typhoid fever, due to deficient drainage and general filth, and suggested several sanitary measures which were recommended by the Secretary.

(30) A complaint has been made of the prevalence of typhoid fever in Montrose, Susquehanna County. Medical Inspector Taylor, on inspection, was unable to verify the complaint

in the main, but found several minor nuisances. He also suggested the pressing need of a pure water supply for the city. The Secretary had pointed out these needed reforms to the Burgess, advising that if a pure water supply could not speedily be introduced, earth-closets should be substitued for privies throughout the entire town, as under the present system the pollution of all wells was only a question of time. The Burgess was evidently disposed to do all in his power to promote sanitary measures.

(31) On the receipt of documents and advice from the Secretary, a local Board of Health had been established at Canonsburg, Washington County.

(32) The advice of the Board had been sought with regard to diphtheria at Galeton, Potter County. Circulars and an advisory letter had been sent by the Secretary, which had been gratefully acknowledged.

(33) The attention of the Board had been drawn by a physician to a badly polluted well suspected of having caused deaths from typhoid fever at Sheridanville, Allegheny County. The complaint was accompanied by the analyst's report, fully confirming these suspicions, and the Secretary immediately ordered the well closed.

(34) A complaint of the prevalence of diphtheria at Nazareth, Northampton County, and a request for assistance had been received from a physician. The Secretary at once sent a supply of the circulars of the Board with instructions for preventing the spread of the disease.

(35) A complaint had been received from a member of the Board of Health of Butler, Butler County, that typhoid fever was epidemic in that borough, and asking for assistance. Medical Inspector Thompson reported the sickness to be caused by drinking water from contaminated wells on the south side of the town, which had not yet been supplied with waterworks. From seventy to eighty cases of fever were said to exist. He recommended the erection of a small garbage furnace and the establishment of a local Board of Health. The Secretary had sent documents for this purpose, and had urged the closing of every well suspected of being polluted; also the extension of waterworks to the southern part of the town.

(36) On receipt of a complaint that typhoid fever was epidemic at Beaver Meadow, Carbon County, the citizens had a house-to-house inspection made of the town. Survey blanks for this purpose were sent. From the low rate of mortality, the Secretary thought the sickness was rather of a malarial character than true typhoid fever.

(37) Diphtheria had prevailed at Heckscherville, Schuylkill County. The Secretary had sent circulars and advisory letter.

(38) A complaint of typhoid fever at Rochester Mills, Indiana County, had been investigated by Medical Inspector Matthews. He attributed the disease to the use of water from contaminated wells, and suggested that a well be dug for the use of the people above the town. He also advised that an analysis be made. The Secretary ordered three demijohns sent at once, but no reply had yet been received.

(39) A letter was read from an engineer of Pittsburg, requesting the Secretary's advice with regard to the disposal of the sewage of a town on the Beaver River, not far below which was a dam which might supply the drinking-water for a small village. He had replied, stating that the parties owning the dam referred to could take legal proceedings in the event of the sewage being emptied into the river, whether it were used as a water supply or not. He further advised the inquirer, in any event, to make ample provision for the purification of the effluent before it entered any stream. Circular No. 30 was also sent.

Complaints of minor nuisances had been received from —

(40) Fryberg, Clarion Co.
(41) Rosemont, Montgomery Co.
(42) Ligonier, Westmoreland Co.
(43) Leechburg, Armstrong Co.
(44) Troy, Bradford Co.
(45) Fredonia, Mercer Co.
(46) McKees Rocks, Allegheny Co.
(47) Haverford College, Montgomery Co.
(48) Coopersburg, Lehigh Co.

(49) Wrightsville, York Co.
(50) Bolivar, Westmoreland Co.
(51) Rankin Station, Allegheny Co.
(52) Port Providence, Montgomery Co.

In each case the necessary number of signatures and the affidavit required had not been forwarded.

(53) The financial report showed the receipts during the year to have been $3,582.20, and the disbursements $3,582.05, of which $1,654.28 were for incidental expenses of the Secretary and office, and the remainder for traveling expenses of members, inspections, analyses, vaccine virus and sanitary conventions.

(54) The number of written communications sent since the last annual meeting had been 1,777, and the number received 1,794.

(55) The total number of circulars distributed during the same period had been 20,509. Number of boxes of complete sets of circulars, 926.

(56) The additions to the library had been: of books received as exchanges and donations, 92; purchased, 6; of pamphlets received, 34.

The report of the Secretary was now accepted and referred for publication.

Reports of standing committees being in order, Dr. Pemberton Dudley, Chairman of the *Executive Committee*, reported that since the last regular meeting of the Board two regular meetings and one special meeting had been held.

At the regular meeting held August 31st, voucher 429, and vouchers numbered 454 to 466, amounting to $460.28, were examined and approved.

At the special meeting held September 21st, vouchers numbered 467 to 484, amounting to $696.35, were examined and approved.

At the regular meeting held November 12th, vouchers numbered 485 to 486, amounting to $303.54, were examined and approved. The report was accepted.

Dr. Benjamin Lee, Chairman of the *Committee on Vital Statistics*, reported that the Register of Physicians published by the Board, as was expected, had met with considerable criticism. It was proposed, in order to insure accuracy in the next register, to assign the duty of examining and transcribing the registers in the various Prothonotaries to the Board's medical inspectors, with clearly defined instructions as follows:

Each inspector to examine the records of the counties within his own districts, with instructions to omit from his return the names of persons deceased, removed, or declining practice, and to make special references to all persons whose registration appears to have been in any way irregular. The report was accepted.

Dr. J. F. Edwards, Chairman, *Committee on Preventable Diseases and Supervision of Travel and Traffic*, stated he had no written report to present, his committee reporting every month such matters as come under its observation through THE ANNALS OF HYGIENE, of which he was the Editor.

The report of the *Committee on Water Supply, Drainage, Sewerage, Topography, and Mines* was made by the Chairman, Mr. Howard Murphy, C.E., and was devoted to the question of the drainage of the Devon Inn. It urged in the strongest manner the importance of the insistence on the part of the Board on the complete purification of the effluent of the drainage of the Inn before it is permitted to enter the stream in question, considering the question to be one not simply of local or individual interest, but affecting almost every water supply in the Commonwealth. The report was accepted.

The report of the *Committee on Public Institutions and School Hygiene* was presented by Dr. Geo. G. Groff, Chairman. It described the distribution of the two circulars on School Hygiene, the latter of which, for the instruction of school trustees and controllers, had recently been prepared, and the delivery of twenty-five lectures to teachers, school directors and farmers' institutes on the importance of better sanitary conditions in homes, schools, churches and public institutions. The report drew special attention to the following evils in schools: insufficient lighting, overwork, the spread of contagious diseases through carelessness in sending convalescents from these diseases to school while still in an infective condition; the abolition of a recess and the absence of any proper medical and sanitary supervision of schools. Reference was also made to the lack of proper sanitary precautions in the establishment of new summer resorts, the deficient ventilation of churches, and the dangers of holding public funerals in cases of death from contagious diseases. The committee felt that on the whole improvement was being made in the matter of the construction of schools and other public buildings, as also in the heating, ventilation and plumbing of the same. The report was accepted.

Dr. Dudley, Chairman of the *Committee on Adulterations, Poisons, Explosives, and other Special Sources of Danger to Life and Limb*, reported verbally that an investigation was being made by the committee into the subject of the use of chemical preservatives for milk, but that it had not yet reached a point where it was deemed advisable to make any of its results public.

In the absence of Dr. Samuel T. Davis, Chairman of the Committee on *Sanitary Legislation, Rules and Regulations*, Dr. Benjamin Lee reported a list of all the bills passed in the last session of the Legislature relating to sanitary matters.

The report was accepted as the report of the committee, with the understanding that Dr. Lee's name appear together with that of Dr. Davis appended to the report.

REPORTS OF SPECIAL COMMITTEES.

The Chairman of the Committee on *National Rivers Conservance Commission* (Dr. S. T. Davis) not being in attendance, no report was presented.

Dr. Pemberton Dudley moved, with regard to the appointment of standing committees for the ensuing year, that the committees stand as last year, except that Dr. Groff's name be substituted for that of Dr. McClelland as Chairman of the Committee on Public Institutions and School Hygiene, and for that of the same gentleman as member of the Committee on Water Supply, Drainage, Sewerage, Topography and Mines. The motion was carried, and the committees therefore stand as follows:

Executive Committee.—Pemberton Dudley, M.D., Chairman; Howard Murphy, C.E., Joseph F. Edwards, M.D., and Benjamin Lee, M.D., Secretary.

Committee on Registration and Vital Statistics.—Dr. Benjamin Lee and Dr. S. T. Davis.

Committee on Preventable Diseases, Disinfection and Supervision of Travel and Traffic.—Dr. Joseph F. Edwards and Dr. Pemberton Dudley.

Committee on Water Supply, Drainage, Sewerage, Topography and Mines.—Mr. Howard Murphy, C.E., and Dr. George G. Groff.

Committee on Public Institutions and School Hygiene.—Dr. George G. Groff and Mr. Howard Murphy, C.E.

Committee on Adulterations, Poisons, Explosives and other Special Sources of Danger to Life and Limb.—Dr. Pemberton Dudley and Dr. Joseph F. Edwards.

Committee on Sanitary Legislation, Rules and Regulations.—Dr. Samuel T. Davis and Dr. Pemberton Dudley.

New business being in order, it was ordered that the next State Sanitary Convention be held at Erie, Erie County, on such date during the latter part of February as the Secretary may consider most suitable.

The following members were appointed as a Committee of Arrangement for the Convention, with power to act: Dr. Groff, Chairman, with Drs. Lee and Dudley.

The Secretary presented accounts, vouchers numbered 485 to 486, amounting to $303.54, which the Executive Committee had audited and approved. The accounts were approved.

The Secretary suggested that a circular on the "Sanitary Management of Dairy Farms" be prepared for distribution among farmers, dairymen, creamery proprietors, etc., and that a circular on this subject, prepared by Dr. Russel, of Glasgow, Scotland, be taken as a basis for same. The publication of such a circular was authorized.

The Secretary suggested that a circular, addressed to physicians and midwives, recommending measures for the prevention of blindness, as suggested in a communication received some time since from the Sydenham Medical Coterie, of Philadelphia, be issued. The suggestion was adopted.

Referring to the conditions described in the annual report, as existing at Wallingford, the Secretary proposed the publication of a paper read at the Lewisburg Convention, on Sanitary Protective Associations. The publication of such circular was ordered.

"The Model Ordinance for the better Protection of Life and Health in Cities and Boroughs in this Commonwealth," originally proposed by the Board as a guide to municipal corporations in framing their sanitary ordinances, was, on motion, unanimously adopted as a "Regulation of the Board," to be enforced in all "cities, boroughs, districts and places having no board of health or health officers, or in case the sanitary laws or regulations in places where boards of health or health officers exist should be inoperative," in accordance with the provisions of Section 6 of the Act of June 3, 1885, "to establish a State Board of Health," which declares that, in the places aforesaid, or under the circumstances aforesaid, "the State Board of Health shall have power and authority to order nuisances or the cause of any special disease or mortality to be abated and removed, and to enforce quarantine regulations as said Board shall direct."

In asking for the adoption of this regulation, the Secretary stated that it had become necessary as the basis for prompt and definite action on the part of the executive officer in the rural districts and small towns; the expectation of the Board, when it was established, that the State Legislature would at once see the expediency of establishing local boards of health in such places, had been entirely disappointed.

The Secretary presented a compilation of the acts passed by the last Legislature in reference to the protection of life and health, which he had classified and annotated, and moved that it be printed as "Appendix B" to the "Compendium of the Laws relating to the Public Safety of the State of Pennsylvania." It was carried. In the same connection the Secretary stated that "Appendix A" of the Compendium being out of print, he had annotated it, and suggested that a new edition be issued. It was so ordered.

The pamphlet containing the Constitution, By-Laws and Regulations of the Board was also stated to be out of print, and a new edition, containing the regulation just adopted, was authorized.

On motion of Mr. Murphy, it was ordered that the new edition of the Constitution By-Laws and Regulations of the Board, together with the Compendium of Sanitary Laws, including the two Appendices, the names and addresses of the members and inspectors, the lists of committees, and such other information as the Secretary may consider pertinent, be bound together in one volume as a manual for the use of the Board and its inspectors. It was carried.

Dr. Dudley moved that a sufficient number of copies of such manual for the Board, its inspectors and heads of departments of the State Government, be bound in sheepskin, and the remainder in cloth, for general distribution. It was carried.

On motion of Mr. Murphy, the Secretary was instructed to transmit the thanks of the Board to the physicians and to the citizens of Johnsonburg who so promptly, energetically and generously assisted the Board in the emergency resulting from the outbreak of smallpox at Clarion Junction, and by such assistance contributed materially to the successful results which crowned the efforts of the Board.

The subject of inadequate provision for lepers discovered in this State, referred from the annual report of the Secretary, was then called up. Mr. Murphy moved that, in view of the evident lack of sanitary precaution and humane provision in regard to cases of leprosy in this State and in the United States, the Secretary be requested to investigate the subject and report as to the appropriate measures for remedying this evil at the next regular meeting of the Board; and further, that he be authorized to communicate with the Supervising Surgeon-General of the United States Marine Hospital Service and with the President of the United States, urging the importance of bringing this matter before Congress at an early date.

With reference to the communication received from the General Baggage Agent of the

Pennsylvania roads west of Pittsburgh, and from the State Board of Health of Iowa and Ohio, calling attention to the fact that the Boards of Health of both of these States had considered it expedient to forbid the transportation of the bodies of persons dead of diphtheria in public conveyances, the Board ordered the Regulation in Regard to the Disinterment and Transportation of Dead Bodies (No. 4, Regulation of Travel and Traffic) to be amended by inserting the word "diphtheria" after the words "typhoid fever," in Rule 1, under the heading "Transportation of Bodies," so that said rule shall read, "The transportation of bodies of persons who shall have died from smallpox, Asiatic cholera, typhus fever, diphtheria or yellow fever, is strictly forbidden."

The Chairman of the Committee on Water Supply, Drainage, Sewerage, Topography and Mines called up the subject of abandoned canal beds. On motion of Dr. Dudley, it was resolved that the chairman of this committee be directed to correspond with the companies or individuals owning or leasing the various and abandoned canal beds or other abandoned water-ways in this Commonwealth, in order to obtain information as to their present condition and effect on the public health, and authorized to make such inspections as he may consider necessary in order to obtain definite information in addition to that received from the owners, and is further directed to report on this subject at the next regular meeting.

The action of the Secretary in issuing credentials to Dr. J. H. McClelland, President of the Board as a delegate to the International Congress on Hygiene and Demography in August last, and in obtaining from the Governor of the State a commission for the same gentleman to represent the Commonwealth of Pennsylvania at the same Congress, was approved.

On motion of the Chairman of the Committee on Water Supply, Drainage, Sewerage, Topography and Mines, it was resolved, that this Board condemn in the strongest terms the practice, which is now becoming a very common one in the smaller towns of the State, of making use of abandoned drinking-wells as receptacles for cesspool-filth and other house drainage, and that in every instance in which the Executive Officer has reason to suppose that such disposition of filth and drainage is the cause of disease, he be requested to use the authority of the Board to forbid its continuance.

On motion of Mr. Murphy, it was resolved that the members of the Board be at liberty to invite the medical inspectors of the Board, the members of other State and local boards of health, and such other persons as are interested in sanitary science, or whose presence may be of interest or benefit to the Board, to be present at any meeting of the Board.

On motion, the chairmen of the several standing committees were authorized to incur such reasonable expenses as may be necessary for the due prosecution of their work, and to forward vouchers for the same to the Secretary.

In view of the urgent need for the improved means for disposing of house drainage in Forest City, as indicated by the reports of Medical Inspector Taylor, the Secretary was instructed to confer with the authorities of that place, advising that immediate steps be taken for providing the town with a proper system of drainage or sewerage as local circumstances appear to demand.

On motion of the Chairman of the Committee on Water Supply, Drainage, Sewerage Topography and Mines, it was resolved that two engineer inspectors be appointed, one for the western and one for the eastern part of the State; said engineer inspectors to receive the same compensation and to be invested with the same authority as the medical inspectors of the Board; and that whenever a report be made by an engineer inspector, a copy of the same be transmitted to the medical inspector of the district in which the inspection was made as well as to the Secretary, and when so requested to the chairman of any committee, it being understood that the Committee on Water Supply, Drainage, Sewerage, Topography, and Mines shall be consulted in the appointment of such engineer inspectors, but that nominations for these positions shall be made in open meeting of the Board.

Mr. Murphy moved that the Secretary be instructed to request Alfred Lee, Esquire, to present a bill for his services in preparing the full and able opinion on the subject of the authority of the Board to prevent the pollution of streams in this State, and that a sum of not less than $150, or more than $250, be appropriated for this purpose.

It was carried.

On motion, the Chairman of Committee on Adulterations, Poisons, Explosives, and other Special Sources of Danger to Life and Limb was instructed to obtain specimens of butter from leading dairies with a view to determining to what extent injurious materials are made use of for the purpose of coloring the same.

On motion of Mr. Murphy, the Secretary was instructed to subscribe for the *Engineering News* and *Engineering Record*.

The Secretary presented a communication from his Excellency the Governor of the State, inclosing a proclamation calling upon all State officers to lend their assistance in making the exhibit of the State of Pennsylvania at the World's Columbian Exposition, to be held in Chicago, in the State of Illinois, and which is to be formally dedicated on the 12th day of October, A.D. 1892, and regularly opened to the public on the 1st day of May, A.D. 1893, one that will be a source of pride to every Pennsylvanian and a revelation to the world of the enterprise, progress and unrivaled resources of the State, and requesting such officers as may wish to take part in said Exposition to communicate at an early date with Benjamin Whitman, Excutive Commissioner of the Board of World's Fair Managers of Pennsylvania, at his office in the city of Harrisburg, in order that he may be enabled to learn their views and purposes on the subject, and to aid in making such arrangements as to space and location as will secure the best results.

The Secretary was, on motion, instructed to confer with the aforesaid Benjamin Whitman, Executive Commissioner, with the Secretaries of the Boards of Health of other States, and with the Secretary of the American Public Health Association, in order to obtain their views as to the best means of illustrating sanitary work, and as to the expediency of conjoint action between these bodies for this purpose; and the Secretary was further authorized, in case the result of such correspondence should be the proposal of a conference between these bodies, to attend such conference as the representative of the Board.

The Secretary stated that he had received the announcement of the opening and course of instruction of the new Laboratory of Hygiene of the University of Pennsylvania, which would be equipped and ready for use on February 1, 1892.

This would be an occasion of great interest to the Board and afforded an opportunity for the establishment of such relations between the two bodies as might accomplish most beneficial results for the cause of sanitary science in the State. He therefore proposed the following resolutions, which were passed:

Resolved, That the Board has received with sincere satisfaction the formal announcement of the approaching opening of the Laboratory of Hygiene of the University of Pennsylvania, considering that it marks an era in the progress, not of science only, but of civilization, in this Commonwealth.

Resolved, That the Secretary be instructed to communicate with Dr. William Pepper, Provost of the University, and Dr. John S. Billings, Surgeon, U. S. A., Director of the Laboratory, requesting a conference for the purpose of formulating a plan by which the State Board of Health may avail itself practically of the facilities afforded by the Laboratory for the investigation of the causes of disease, and of the means for its prevention, for the analysis of foods, water and other beverages, and for bacteriological studies.

Resolved, That in a definite co-operation between the University and the State Board of Health, in the prosecution of such researches, the Board recognize an opportunity not only for mutual profit, but for advantage of the greatest moment to the entire State.

A communication was presented from the Secretary of the Woman's Health Protective Association of Pittsburg, requesting the Board to take some action to abate the nuisance of promiscuous expectoration in public conveyances and other places. The letter was referred to the Secretary for reply, with an expression of the sympathy of the Board with the work of the Association.

The Board then adjourned. (Signed)

BENJAMIN LEE, *Secretary*.

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COMMUNICATIONS.

Methods of Collection, and the Disposal of Waste and Garbage by Cremation.*

BY COL. W. F. MORSE,
New York City.

THE problem of waste collection and disposal is an ever-present one. The production of waste goes on contemporaneously with life. There is no living creature but discards some form of effete or worn-out matter, and as the scale ascends from the lowest forms of animal life to man, so the amount of worthless and exhausted material increases with each gradation. As the result of life is the production of waste, so the accumulation and continued presence of waste mean discomfort, annoyance, nuisance, disease and premature death; for it is certain that substances necessary to the support of the living become, by assimilation, by use, by association, even, changed into matters which are deadly poisons to all the higher forms of life.

To the Health Department of cities and towns is assigned the oversight, often the direct execution of the laws which govern and control the collection and final disposition of this mass of waste. With the health officials lies the responsibility, and from them come the suggestions, advice and orders which compel the adoption of sanitary methods, the abatement of nuisance, and the regulation of disease dangerous to public health. And so it follows that any phase of this great subject of the public welfare which relates to promoting the comfort, even, of the people, is something which may not be overlooked by the zealous health official.

It has fallen to my lot to be thrown into contact with a great number of health officers and civil authorities who are interested in the subject of garbage and waste collection and disposition, and the questions asked, the information desired, and the objects sought for, have led me to the conclusion that if the experience of the many could be brought to a common point for comparison, the results might afford some hint for future guidance.

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* Read before the State Sanitary Convention, at Erie, Pa.

The beginning of this question is in the household. How are the waste of the table, the sweepings, the yard refuse, the ashes from fires, put aside to be taken away? Usually altogether in a pile, a box, barrel or an iron can; a mixture of matter which no human power can thereafter separate, or wisely and safely dispose of. The ashes and a large part of that refuse should be put by itself; the worthless and putrescible matter by itself. The one is good for some sorts of work; the other valueless and dangerous, and this separation can only be made at the house, and that with a small amount of trouble.

The collection of waste is done by four different agencies. These are:

First—The Individual System.—Every man taking care of his own waste in his own way, with no responsibility for results, with little regard for cleanliness of method, with the only object of getting it away, out of sight in the shortest time. A householder hires a cart-man and sends away a load a week in winter, mostly ashes; in spring, of all sorts of refuse and cast-off things; in summer, of vegetables and animal leavings from the food supply. The cost is from ten to fifty cents per week, and there is no attention paid by anybody as to what is done with the waste. So, annually, the privy vault is cleaned at any price that can be agreed upon, and the duty of that householder is discharged. The results are: first, the payment of at least double the amount it would cost if done under regulation by the town authorities, and second, the promiscuous dumping of all manner of accumulations, by an irresponsible cart-man, at any place where he will not be detected. There are cities of 100,000 people who have no way but this of getting rid of waste.

Second—The License System.—Men are licensed to do scavenger work. The city charges an annual small fee, issues a permit and a badge or sign. These men sometimes number two or three hundred, and all make a revenue. Usually a sort of route is established, and a certain number of patrons secured, which are fairly well looked after. As a rule, the city designates certain places where the garbage shall be put, and has an oversight, through the sanitary police, over the scavengers. While the amounts charged are low, still the sum at the end of the year paid by each householder is more than double what would be paid under the operation of a better system. The advantage is, that the scavengers, being known, can be more readily detected in any infringement of the sanitary laws, and punished.

Under this license-method the removal of night-soil is almost universally carried on, no collector being allowed to do work unless he has provided the equipment of tightly-sealed barrels, kept clean and inoffensive, the work to be done with prescribed disinfectants, and at certain hours, and the excreta conveyed outside the city limits.

The trouble comes with the deposit of this excrement on adjoining lands. Up to a certain point, in the winter season, the farmers will allow its placing on their land; but presently this is objectionable, the neighbors protest, there is talk of injunction, complaints increase, the collector goes farther away; the thing is repeated, until there comes a time when the long haul to place of deposit increases the tax upon the householder, and it becomes a most serious burden. If the money annually paid by the inhabitants for this work was applied to a proper collection and disposal service, under municipal regulation, it would not only pay the cost, but go far toward paying for all the garbage collection as well.

In an eastern city, where this work is done by the city teams and men, the receipts, at a very moderate price for each vault cleaned, not only paid all expenses, but made a profit of 37 per cent. upon the cost, and paid 34 per cent. of the expense of garbage collection.

In a southern city, this work, done by the city, makes a profit of $400 per month; and in another, where no vaults are permitted, the annual expense to each house is $3.00 per year only.

Third—The Contract System of Collection.—The city advertises for bids, and annually lets out the whole work of garbage service. This is the most convenient way for the authorities to have the work done; but it is also a less efficient way than the municipal system. The contractor is often compelled, by competition, to do the work at a small margin of profit, giving poor service, causing endless complaints and a general feeling of annoyance. Often changing his employees, the householders are overlooked, sometimes intentionally, until a petty system of blackmail is established; and there being but a limited responsibility, because of the usually short term of contract, the contractor takes little pains to do good work, preferring to skim over his district as quickly as possible.

The experience of a great number of places is not favorable to the contract method, and by comparison in the same place where a part of the work is done by the city, the service of the contractor is inferior to that performed by the city's teams and men. But the contract method is often the only way in which the work can be done, and when in use there should be the most vigilant inspection service maintained.

Fourth—The Municipal System.—In this case the town or city does all the scavenger service with its own teams and men. This makes it necessary to maintain an extensive equipment and to provide for the stables, etc.; but if this be placed under control of the bureau of streets, these men and teams can often be used for other work at special seasons, dividing the expense. The responsibility for cleanly work is more definite, the service more thorough; complaints are promptly attended to; the employees are more careful, and with the proper management, can be made to take pride in their work, and give efficient service.

A trial in several of the large cities of the two methods—contract and city service—has resulted in the recommendation of the municipal system, as the advantages have invariably been shown to be greater.

In a great number of the smaller cities this question of garbage collection and disposal is now under consideration. Up to this time they have ignored the subject, but now find themselves compelled to adopt some organized system of collection and a better method of disposal of waste.

A comparative statement of the cost of garbage collection at many places will give a standard by which any city or town desiring to make an improvement can be guided.

Taking the last censusas the basis for population, and adopting the per-capita method of computation, the following table, while not exactly accurate in all respects, will still show the approximate cost of collecting garbage, reckoned in figures, for each inhabitant.

The following cities and towns make their garbage collection by contract, the cost named per capita:

Chicago	24c.
Philadelphia	13¼c.
Washington, D. C.	10¼c.
Detroit	17¼c.
Hartford	13¼c.
Richmond, Va.	07¼c.
Montreal	11c.
New Haven	08½c.
Toledo	13½c.
Richmond, Ind.	13½c.
Portland, Me.	12½c.
Elizabeth, N. J.	12½c.
St. Paul.	08¼c.
San Antonio	30¼c.
Haverhill, Mass.	09½c.

The following use the municipal system:

New York	21½c.
Boston	22½c.
Providence	15½c.
Milwaukee	17½c.
Memphis	31c.
Charleston, S. C.	18½c.
Cambridge, Mass.	25½c.
Los Angeles, Cal.	27½c.
Newport, R. I.	20½c.
Lynn, Mass.	12½c.
Lawrence, Mass.	25½c.
Springfield, Mass.	16½c.
Yonkers, N. Y.	37½c.
Keokuk, Ia.	25½c.
Norfolk, Va.	21½c.

Assuming these figures to be approximately correct, the average cost of contract work would be about 14c per capita, and of the municipal service about 22c—a difference of 8c per capita in favor of the contract service.

About 17c per capita may be taken as the cost which will give effective service for any city or town, and be stated as the mean standard for most of the places in this country. This has no reference to the cost of removing night-soil, but applies only to the garbage, ashes and refuse collection, and does not include the cost of equipment, but only the annual expense of removal.

Any method for thorough and satisfactory collection of all garbage, whether done by the contract or by the municipal system, will include some well-defined and simple rules which should be rigidly enforced.

I. An iron garbage can, with tight cover, into which the household puts each day's table offal, tin-cans, house-sweepings, cast-off articles, worthless matter, everything except ashes and non-combustible material. This can is set in a particular place, always ready for the collector. The ashes are separately placed in another receptacle.

II. The collector's cart is preferably of iron, with tight cover; or, if of wood, made water-tight, with a wooden or canvas cover, holding one or two cubic yards, drawn by one horse, arranged to tip up and discharge its load with no loss of time. The garbage collection service is daily in summer, tri-weekly in winter; the ashes collection weekly in summer and tri-weekly in winter, by a separate set of teams and men, and used for city work in filling low grounds or as the foundation for streets. The days of collection, and if possible, the probable hour, are stated on a printed notice posted up in each household.

III. When the collector finds in the cans ashes mixed with garbage, he may refuse to receive it, and, if persisted in, the sanitary officer notifies the party of the penalty, and, if needed, enforces it. Usually one or two examples are enough to convince any community of the wisdom of obeying the regulations.

IV. The city being districted, and a sanitary inspector in charge of each, if there are bodies of smaller animals found they are included in the daily garbage collection—the larger animals, if not taken away by those engaged in rendering works, are also removed by the city at the expense of the owner. The carts are cleaned after each load, and kept clean. A daily report from each driver is exacted and a weekly report of the whole made to the health officer. The route of the carts to place of disposal is by the least frequented streets.

V. The work of emptying vaults is done by licensed collectors. They must provide sealed oaken or iron barrels or iron tanks, if possible kept in a covered wagon, the whole equipment to be satisfactory to the health officer, and must be kept clean or the license revoked. The charge for each vault should be fixed and not allowed to be exceeded. As a rule this work is well paid for. The nominal price fixed is almost invariably increased, and by the use of various arts and tricks the collector exacts a sum far greater than the real value of the work done, so that the tax upon the householder becomes a somewhat serious matter.

VI. Contrary to the usual custom, this work is best done in the daytime. The odors are more easily dissipated by the heated air of the day than by the heavy, damp night-air; the work is done with light, and therefore better done; the disinfecting more thoroughly accomplished, and with the proper equipment of barrels or tanks and pumps there is no reason for any nuisance or offense. Of course there are exposed places where it would be unwise, but usually this daylight service will be found best. This is the practice in the Southern States almost universally.

The whole service of garbage collection should be under the immediate supervision and control of the Health Board. As the control of diseases which may become epidemic belongs to them, as the inspection of water, food and milk supply is done by them, and as this board is held responsible for the sanitary consequences of the good or bad administration of the garbage and dead animals and night-soil collection and final disposal of any place, so they should be granted such power to regulate and administer this department as will render it efficient and satisfactory to the public. Police power should be given the inspectors; the ordinances suggested by the board should have prompt attention; the men and funds for their use should be ample for the work demanded; they should be held to a rigid accountability for a wise, efficient and economical performance of the work, which has been and will always be disagreeable, troublesome, exacting and yet a most necessary part of any communal life.

THE FINAL DISPOSAL OF WASTE AND GARBAGE BY CREMATION.

Whatever may be the method used in the collection of waste from a community, the final disposal of this waste is a matter which compels serious attention.

The ways now commonly in use for getting rid of waste may be briefly stated:

The mixed garbage, refuse and ashes are dumped upon low grounds or unused lands, within or near to the city limits. The bodies of smaller animals are included, and too often the contents of privy vaults finds the same disposition. The results are only too obvious. Endless complaints, nuisance, litigation, contagion and disease come directly from these piles of rotten matter. When completely covered with earth, and to casual appearance sound and solid ground, there is still underneath the hidden cause of disease, prompt to appear when the piles are disturbed, or when chosen as the sites for dwellings.

Again, the waste is to some extent separated, and the putrescible portions taken away as food for swine. If done well and often, it may be possible to use a part for this purpose, but experience in New England has shown the increase in cases of trichinosis to be, in three years, from three to seventeen per cent. among hogs fed with the garbage of the city of Boston, and an annual mortality caused by hog cholera at other places where city garbage is used as food for swine is so great that measures are about to be taken to prohibit the feeding of any city garbage to swine in Massachusetts. How far the milk sold in cities and towns is made unfit for infants, by reason of the food of the cows being mixed with city garbage, is a matter which can only be conjectured, but it seems probable that a large part of the death rate of infants is due to this cause.

The city waste of all sorts is deposited in the nearest water-course. A large city of this State dumps into a narrow creek, running through its bounds, all the sewage, all the garbage and the bodies of small animals. In the summer season, when the water is low, the barrels and boxes which have held garbage and night-soil, and the bulk of tin-cans and miscellaneous refuse are so great as to seriously obstruct the scanty flow of water. A few miles below, another large city takes a part of its water-supply from the river into which this creek flows. What must be the quality of the water?

Often the garbage, meaning putrescible matters only, is hauled long distances to farming-land, and used for a so-called fertilizer—a doubtful use of time and men. The value of such material for this purpose is almost nothing. By the time it is converted into plant-food, by sorting out the imperishable substances and mixing with muck or earth, the cost of the operation, with the low value of the product, has made the expense greater than its worth. One experiment of this sort usually satisfies the most sanguine advocate of the theory of "returning to the soil anything that has been taken from it." The idea is a beautiful one, but its actual realization, by means of the manipulation of crude and miscellaneous city waste, is a practical failure.

The final disposal of the contents of privy vaults, as usually done, is something which demands still more extended and severe examination; a matter which is not to the purpose now to discuss, but which may be characterized as filthy, unsanitary, threatening and positively dangerous.

The late advances in sanitary science have brought home to the attention of health officials, and through them to the civil authorities and the general public, the fact that some more sanitary way must be provided for the final disposal of waste; and following this comes the natural inquiry, What better way is there, and what does it cost? Putting aside the plausible theories, and the unpracticable and visionary inventions which by the test of actual trial have proved to be failures, there remain two methods, which in the hands of business men have been brought to the test of continuous work for a period long enough to give data for estimating results.

One is the manufacture of garbage (meaning only putrescible matter) into a commercial product; and the other the destruction of all waste that fire will consume, and the utilization of the ashes for a revenue.

The first method has been used in several of the larger cities for four years past. By means of heat the water and gases of garbage are expelled, and the residue treated by chemicals, which extract the grease, the residuum being used as a basis for the manufacture of a fertilizer. This process is adapted to only one class of the city waste—the vegetable and animal garbage. It does not deal with that large percentage which is included under the term of inorganic waste or refuse, and which in bulk is nearly twenty per cent. of the whole amount produced. Nor does it take any account of the night-soil or contents of vaults, nor, except in a very limited way, of animals. Consequently, the process does not cover the whole field of garbage collection, but limits its work to about fifteen or twenty per cent. of the bulk product; and this must be furnished separately from all other matters.

The works or plant required are large and expensive, the royalties upon the patents costly, and the whole investment beyond the means of any except the larger cities, so that private companies are organized to carry on the work, which require long contracts, at prices usually far above what other systems are willing to guarantee. The operation is attended with risk from fires, because of the materials used, the manufactured product is of variable and very uncertain value, and the operation of the whole investment seems to be hazardous and somewhat doubtful. Of the eight plants erected by the company controlling this process, at different points, at a cost varying from $50,000 to $100,000 each, there are now two only in active use. Two have been given up as unsuccessful; two have been compelled to cease by reason of proceedings at law involving their insanitary operation; one is treating garbage at a cost of $1.80 per ton, which can be destroyed by fire at 75 cents per ton; and the other is run under serious disadvantages which somewhat impair its usefulness.

There remains to be considered the destruction of garbage, inorganic waste, the bodies of animals and excreta of all kinds by the agency of fire. Assuming that waste is useless, obnoxious, valueless and dangerous, its destruction becomes a question of sanitary and economical performance.

Can it be done without offense and with a reasonable degree of expense? This question can be emphatically answered, yes.

For more than twelve years it has been done in England, at fifty places. For sixteen years the United States Government has destroyed the waste of military posts in a special furnace, and from three to five years' experience of more than thirty different cities and towns in the United States and Canada has proved this statement correct. In this length of time cremation of waste has undergone the severest tests possible, and the results, as reported by disinterested observers, can safely be accepted as conclusive.

The exact description or style of crematory furnace is a matter which each city must decide for itself. There are four now in active use, which have been examined by experts, have stood the trial of consecutive years of work, and which can be depended upon for satisfactory performance. The *Mann Furnace* is a modification of the English "Destructor," of which one example only is in use at Montreal. The *Rider Garbage Furnace*, four years in use at Pittsburg and Allegheny City; a furnace at Wheeling, W. Va., using gas as fuel, and in successful operation for some two or more years, and, lastly, the *Engle Garbage Cremator*, of which there have been some twenty-eight put into use at various places in the last four years, with four more now in process of construction.

To undertake a detailed description of the construction of these furnaces would occupy more time than can be allowed. Each claims certain advantages, and doubtless these claims are well founded; each has its circle of special advocates and ardent partisans, prompt to point out its distinguishing points. For the present purpose it will be sufficient to examine one only, which, by the construction of the largest number, seems to be more generally accepted as capable of the widest range of service.

THE ENGLE GARBAGE CREMATOR

may be briefly described as a rectangular brick structure, forty feet long, ten feet wide and twelve feet high. At one end a stack of iron or a brick chimney seventy-five feet high, over the furnace an iron covering house with sliding doors, and at the sides, a little above the top of the furnace, wide platforms with ample driveways and approaches. From the platforms iron slopes lead down to the feed holes in the top of the furnace. These are five in number, one being large enough to receive the carcass of a horse. The collection carts dump their loads directly upon the slopes, no further handling being needed. The garbage, as it falls through the feed-holes, is caught by grate bars, extending across the interior half way from top to bottom. The liquid passes through these bars and is retained in a shallow concave pan or hearth below the bars. The capacity of the largest furnace is about twenty cubic yards of garbage and fifteen barrels of liquid at one charge. At each end of the furnace, on a level with the garbage grates, are fire boxes, and at the stack end are flues into the chimney, closed by heavy fire-clay slabs. The interior walls are lined with heavy fire-clay blocks, accurately fitted together, backed on the outside by a solid brick wall, braced and bonded together with heavy stays, rods and angle irons. The furnace being charged, the fires are lighted first at the front and afterward at the rear end, the flames from the fire passing over and through the mass of garbage piled on the grates, driving the smoke and gases into and across the second or front fire, where they are consumed.

The flames from the second fire are, by the action of the strong draught, brought back underneath the garbage grates, intensely heating the garbage from the under side. When liquids are to be destroyed, a part of this heat and flame is directed under the hearth or pan, and all the contents quickly evaporated and burned. All the odors, gases, and product of combustion are passed through one or the other of the fires, there being no escape except across these fire boxes. The ashes, as they fall through the grates, are raked out of a lower range of doors on the side, and from time to time, as required, the garbage is stirred up and distributed over the grates by bars thrust through an upper range of stoke doors.

The action of the furnace is continuous, and has been carried on for six months together without cessation. Usually the whole garbage collection, including the bodies of animals of whatever size, is daily destroyed, and at night the night-soil is consumed. When large quantities of night-soil are to be consumed it requires a specially constructed furnace to dispose of the liquids, but when the quantity is small it is burned in the garbage cremator, with no interruption of the operation in destroying garbage.

The body of a horse is consumed in an hour, a dog in six minutes, and a cubic yard of garbage may be destroyed in ten or fifteen minutes, or less, if containing small amounts of liquid.

The cost of operation depends mainly upon the quality and cost of fuel. Under ordinary conditions, with the labor of three men, and a good quality of fuel, seventy-five yards of garbage and miscellaneous refuse (equivalent to thirty tons) can be destroyed at a cost of ten to eighteen cents per. yard. This may be stated as equivalent to thirty to fifty cents per ton.

The latest furnaces, built at Savannah, Ga., destroy 3,000 cubic feet of miscellaneous garbage with 128 cubic feet of pine wood. On a week's run 21,000 cubic feet of material is destroyed. This is a pile of refuse matter ⅖ of a mile long, three feet high and three feet wide, burned to ashes in seven days' time with seven cords of wood. The average cost for the last month was 12 cents per cubic yard for fuel used and labor employed, equivalent to about 30 cents per ton.

The ashes of garbage, and especially animal matter, have a positive value. Chemical analysis at the Agricultural Experiment Stations show that they contain from 5 per cent. to 12 per cent. of potash and phosphoric acid, being nearly equal to Canada wood-ash of the same bulk. The practical application of the ashes to land by farmers shows the value to be even more than is claimed. Under favorable conditions the value of these ashes should defray the cost of the fuel used in combustion.

There are four sizes of the Engle Cremators, adapted to places from 2,000 to 30,000 population. When cities of the largest size adopt this method, two or more furnaces are built at different locations to save transportation of garbage. The cost of the cremators is governed by the varying conditions of locality, cost of material, labor, transportation, the kind of structure demanded by the special situation, etc., etc., but may be said to be extremely moderate in amount when compared with the large sums necessary to build works for other methods of disposal.

The sanitary performance of these cremators is beyond question. By reason of the location within the city limits, near to the collection field, the operation must necessarily be entirely sanitary, without smoke or odor, and creating no nuisance. In all the places where these cremators have been tried, and where managed as directed by the printed instructions of the Engle Company, there has never been any complaint lodged with the company from any unsanitary or offensive conditions created by the furnace. This may appear to be a strong statement, but is fully borne out by the facts, and the testimony on file from health officers and city authorities is very convincing upon this point.

The work done by the Engle Cremators may be easily summed up. There have been twenty-eight garbage cremating furnaces constructed at twenty separate towns and cities, ranging in locality from the tropics to the extreme north of this country, and from the Atlantic to the Rocky Mountains. Of this number three have been replaced by larger constructions of the same kind; and in two places only has the use of the cremator been discontinued, and this from no cause connected with the furnace, but from other reasons.

The United States Government has adopted this form of cremator at two of the military posts, and the city of New York has found an Engle Furnace indispensable in destroying, in the heart of the city, without offense, with no chance for the escape of disease germs, infected articles from persons sick with contagious diseases, as well as the waste of hospitals.

Finally, this method of disposing of the waste of cities and towns has been proved, by long-continued use here and abroad, to be moderate in first cost for the plant, to be strong, durable and convenient in construction, to be able to destroy every class of city waste that fire will affect, to do this with speed, with freedom from nuisance, annoyance, with marked economy in fuel and labor, with some resulting product of value, and with the certainty of relieving the community, the authorities and the Health Department from the continual presence and menace of this most perplexing, annoying and dangerous waste.

It would seem reasonable to suppose that any city or town, where the disposal of garbage gives trouble or creates unsanitary conditions, might avail itself of this method of solving a problem which is not easy to deal with in any other way than by total destruction of the cause of the difficulty.

Growing-Pains.

In our boyhood days we were always hearing of "growing-pains" and "growing-fever." The ruthless hand of Science has shattered many of our boyish idols, and now this "growing-fever" falls like the rest. A French writer claims that there is no such thing, and that the pains and fever which we have been accustomed to regard as coincident with growth must be regarded now as really due to some disordered condition, and calling for medical interference.

Subterranean Paris.

THE WATER SUPPLY AND SEWERAGE OF THE FRENCH CAPITAL.

BY DR. PROSPER DE PIETRA SANTA,
Editor-in-Chief of the *Journal d'Hygiène*; Laureat de l'Institut (Académie des Sciences).

[SPECIALLY PREPARED FOR THE ANNALS OF HYGIENE.]
(Continued from page 197.)

II. UPON approaching the chapter on the utilization of sewer water, I wish to place it under the patronage of four great authorities, because their scientific axioms really constitute the program of this description of a branch of social hygiene.

"Sewer water is capable of important application to agriculture, either for the purposes of irrigation or of fattening pasture."—J. B. Dumas.

"Irrigation of land by sewer water purifies the latter at a profit to agriculture, and causes no danger to the neighboring population."—Prof. Coefield.

"To improve the health of large cities without injury to neighboring communities, it is indispensable to go back to natural ways, by returning to the ground all that life owes to it."—Millet and de Freycinet.

From remotest times this restitution to the land has been practiced with reference to the dung, which has always been considered as a normal pasture-fattener; and this restitution to-day still exists, by the use of the contents of water-closets, in countries advanced in culture.

The type of eternal fertility is the inundation of the Nile River, and the richest soil is found in the alluvian valleys, which are heavily freighted* (colmatées) and washed by the periodical high tides.

Having seen, in the desert, water change the sand to green oases, the conquering Arab, when he came to civilized and learned Spain, did not tarry long before he introduced, in the kingdom of Valencia, river-dams and irrigation-canals.

Myth attributes to Saint Bernard the first idea of utilizing the mud from the drains of the city of Milan, into which the inhabitants were in the habit of throwing all the impurities from the streets and the waste from their wool-factories.

Following his example, by letting the canal of Martesana traverse these drains—which canal discharges its water into the Odda—and by letting the whole float over these vast lands, the industrious and persevering Lombard peasant has produced the *Marcite*, those magnificent prairies, where the grass is cut eight times a year, and which support, per hectare,† three milch cows.

The remembrance of these facts presents itself to the eminently practical minds of the English as soon as the question is agitated concerning the possi-

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*With fertilizing deposits, colmatée being a Parisian expression, and cannot be translated *verbatim*. —Note of Translator.

† A hectare is equivalent to about two acres and one rod.—Note of Translator.

bility of utilizing the sewerage water in the interest of the land-owner, and the to-day unanimous idea may perhaps be well formulated this way:

"No, the fertilizing matters should not become lost to the production; no, they should not be abandoned to the ocean; but they should be made to return to the soil what emanated from it, and in this way made to contribute to the general prosperity."

When, for the first time, there was brought before sanitary science the problem of the hygiene of the large cities, and of the creeks and rivers passing through them, these three utterly distinct matters were often confounded with each other: the cleaning of the sewer water, the irrigation, and the utilization (of the sewerage) for the country. To-day, sanitary engineers and hygienists are better posted regarding the respective values of these three terms.

THE CLEANING.

I. The cleaning by mechanical means (*separation of the solid bodies*, decantation, filtration, etc.) can to-day be looked upon only as means of preparing the sewer water for a far more perfect purification.

The chemical methods have for their aim invariably the separation from the sewer water of all solid matters held in suspension, and of all noxious material dissolved in it; but, while they may well succeed in the experimental laboratory, they are completely out of the question when their application on a grand scale is required, and thus far there has by no means been found a definite solution of this problem.[*]

The purification of the sewer water by electricity, which has been the object of scientific researches by Mr. William Webster, and which was received in England with veritable sentiments of admiration, has not been able to withstand the difficulties accompanying its application on a grand scale.

We may say, with Henry Roscoe, who is charged by the sanitary authorities of London with carrying out and controlling the analyses: "The purification process by aid of electricity is applicable only for the purpose of reducing the soluble matters to a state favorable for *a final purification by means of natural agents*."

PURIFICATION BY THE SOIL.

In all countries this procedure has been recognized, without dispute, as the best. It is by no means an innovation, for traces of its application were found in Jerusalem, and, without having to go that far, we find it in active use for centuries in Milan, Seville, Valencia and Edinburgh.

"The soil," Schloesing has said, "is the cleaner, *par excellence*, for all matters charged with organic substances."

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[*] The process of purification by sulphate of aluminium, proposed by M. Le Chatellier, and the least imperfect of all the known procedures, has been found to be a most excessively dear system, for it necessitates an annual expense of 1,000,000 francs for the reagents needed for every 100,000,000 cubic metres discharged by the "collectors" (*i. e.*, collecting sewers.—Note of Translator) of Paris. But it has the more serious drawback in that the water thus cleaned still contains two-thirds of the total azote of the sewer water and one-third of all volatile and combustible matters, a large part of which is of organic nature.

We have to do, therefore, with a mechanical act; after the manner of a filter, the grosser particles being retained on the surface, and even those held most tenaciously in solution being kept in the pores of the superficial layers, the filtration is so complete that, in cases where the thickness of the soil is sufficient and the ground has been suitably selected, the water, after having passed through it, appears absolutely clear;* and even the microbes themselves are retained at such a point that in the water of the drains of Gennervilliers the micrographical analysis has shown the presence of not more than a score of bacteria, while, as soon as the sewage water of Paris was spread out over the soil two or three metres below the drains, over a thousand times more were found, and the water from the sources of the Vanne contained three or four times as many.

At the same time there occurs, in consequence of the confined air—which the particles of earth inclose between themselves—a combustion of organic matters, a kind of fermentation, from which the nitrification of azote-substances results; this, among others, is greatly facilitated by the enormous surface offered to the water, impregnating the particles of earth, where it is exposed to the action of the air which encircles it. A double movement then occurs in the interior of the soil between the water and the air, by which movement the noxious element and that which is to destroy it are constantly brought in intimate contact. If well regulated, the result leaves nothing more to desire. The vegetation is, therefore, among others, a powerful auxiliary, as it contributes by itself to this work by evaporating a very considerable quantity of water, and by liberating certain substances with which the water is charged.

The technical Commission on Hygiene, of Paris, has recognized, in 1883, the good foundation of these principles, and has energetically contested the injurious influence of this purification (insisted on by Pasteur) upon the human organism, and has loudly proclaimed:

"The sewer water, even if filled with excremental matter, may be subjected to the process of purification by the soil, without any danger to public health."

IRRIGATION.

II. The utilization of the sewer water by irrigation is distinguished from the process by purification proper by its not being effected solely for the purpose of freeing the water from noxious matters contained in it, and to render them innocuous before they enter the river, but also to employ them for the fos-

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* According to the comparative analyses instituted by Marie Davy in the observatory of Montsouris and at the station of Asnières, viz., for the purification of the sewer water by the cultivated soil, the figures obtained in an area of only one metre thickness and conveniently drained are as follows:

	Sewer water immediately after filtration.	Water gathered from the drains.
Organic azote dissolved	2,262 milligr. 00	5 milligr. 67
Ammoniacal azote	19,597 " 00	11 " 13
Nitrous azote	3,613 " 00	546 " 43

tering of vegetation, so as to obtain them, in the form of soil-enrichers *—a great advantage to the public good.†

Speaking simply from the standpoint of salubrity, nothing would prevent the combination of purification properly so called with agricultural irrigation, or the substitution of the one for the other.

Irrigation constitutes, in fact, an excellent mode of purification by the soil. It discharges the water with every regularity desirable; the shape which one has given to the ground prevents the accumulation of a superficial film, and renews the air which this incloses; finally, the vegetation, by a kind of vertical drainage, brings about considerable evaporation. The artificial prairies and the kitchen-garden culture succeed admirably under these large irrigations with sewer water.

One may fear that irrigation alone employed will not completely answer the purpose; for in winter, for instance, the ground cannot absorb as much water as in summer; but the treatment of the sewer water cannot suffer, and the hygiene may, in consequence of it, be not quite complete.

Should this fear be realized, one might easily reserve at the place of the irrigation-fields a surface sufficiently prepared to answer for the purification proper.

In the experimental garden of Gennervilliers the city of Paris practices irrigation in all seasons, and the cultivators of the peninsula practice the same irrigation continuously over 600 hectares of the plain.‡

AGRICULTURAL EMPLOYMENT.

III. The experiences of Clichy and of Gennervilliers furnish, upon the authority of Bechmann, a remarkable demonstration of what agricultural employment may be given to the sewer water.

In spite of the objections of every nature which the first instigators, Mille and Alf. Durand-Claye, had to overcome—in spite of unreasonable opposition to them, and of unreasonable fears for the salubrity of the neighborhood, or for the re-introduction of the subterranean drains, and in spite of the resistance and the trials—the progress has gone on in a brillian tmanner, and the conviction has gained ground that barren strands, sterile and burning-hot lands, which can produce nothing but rye and potatoes, are transformed, step by step, into rich culture soil, whose products are much appreciated in the markets of Paris. The value of the ground has been quintupled; the net product per hectare has increased from 500 francs to nearly 4,000; and this augmentation in the public riches, obtained without the least impairment of salubrity, has brought about a rapid growth in the population, which has tripled in ten years.

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* *Verbatim:* Pasture-fattening, "putting them into grass."—Note of Translator.

† "The sewer water," says de Freycinet, "is the most powerful and most common cause of pollution; it reunites in its bosom all the various impurities which human activity has placed into it, either as factory waste or in the form of sewage from the habitations. In Paris the water actually discharged into the collectors contains from two to three kilograms of solid bodies per square metre, one-third of which is organic matter and comprises thirty grammes azote, and two-thirds are mineral substances, with ten to twelve grammes of phosphoric acid."

‡ Experience has taught the cultivators to use this sewer water in the ratio of 40,000 to 45,000 square metres per hectare per annum.

The first tests made by the city of Paris in the plain of Gennervilliers date from the month of June, 1869. The sewer water raised to the works at Clichy by the aid of special centrifugal pumps, which are set in motion by powerful steam-engines (150 horse-power), at a height of eleven metres, is forced into metallic conduits (with a diameter of 1 m. 10), which gain the plain of Gennervilliers by passing under the sidewalk of the bridge of Clichy. The distribution over the soil is done by the aid of pipes separated by troughs, imbibition-trenches of great carrying power.*

Lieutenant-Colonel Shone de Wrexham, a great partisan of the agricultural employment of sewer water, at a meeting of the French Society of Hygiene, October 14, 1881, showed a new apparatus, the ejector, intended to expel the sewer water by raising it to a certain height. One avoids here the digging of the deep trenches and the costly erection of pumps. The principle of the Shone system consists in the employment of fresh air in one or more ejectors, each of which is provided with an automatic valve, which, placed at convenient points, permits the raising of the water to, it does not import, what height.

In the very effective experiments made in Paris in the municipal works at Clichy-Levallois, with a machine to compress air, of the Westinghouse type, the sewer water was raised to a medium height of seven metres.

The operations of refilling and of emptying the apparatus took, on the average, about one minute and a half.

By a providential accident, the ground of the peninsula was very favorable to the enterprise in question. It is, in fact, formed of an immense bed of alluvial soil of from 7 to 10 m. thickness, around which the Seine flows; this alluvial soil consists of sand and pebble-stones, covered with a thin layer of vegetation. It is underneath this permeable mass that the beds lie which arrest the irrigation water.

"The plain of Gennervilliers constitutes, therefore, an immense natural filter, eminently suited to absorb and purify the impure water.

"Experience has spoken, and the powerful and marvelous instrument of hygiene, which we offer the soil and the plants, has definitely shown its superiority over the bastard procedures of mechanical and chemical purification." —A. Durand-Claye.

If, theoretically, the formidable problem of the hygiene of the Seine has been solved, the practical results are yet insufficient, for, with the ground at our disposal on the peninsula of Gennervilliers, we purify scarcely one-fourth of the sewer water of Paris.

In this situation, the necessity is placed upon us to make the system more general, and to seek new ground to spread it out further.

On July 30, 1870, the Minister of Public Works thought, in principle, that the city of Paris was bound to place the Seine River in a healthy condition by putting the "collectors" farther down the stream, and could continue to enrich its experiences by the enterprises in Gennervilliers.

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*This system of distribution, of nearly forty kilometre extension, is formed by conduits built of concrete and having a circular section of 1 m. 25 to 0 m. 30 diameter. Openings provided with check-valves allow the water to escape with a sufficient velocity to keep the trenches in the ground supplied, which, of gradually diminishing dimensions, cut the irrigated fields in every direction.

In 1875, the Commission instructed to study the question proposed to extend and spread out farther the system over the barren ground in the peninsula Achères, at the northeastern extremity of the forest of Saint-Germain. Every time the project was taken up it produced the liveliest protestations in the Departments of the Seine and the Oise, and it was only after fourteen years of wrestling with them that the good cause has been able to triumph at last by the promulgation of the law of April 4, 1889.

Under the precise letter of this law the ground of Achères, to the extent of about 800 hectares, has been rented by the State to the city of Paris for twenty years, and at a price of 98,000 francs per year, under the condition to spread the sewer water only over those parts which are under cultivation and at the ratio of 40,000 square metres per hectare per year.

The new purification fields of Achères, together with those of the peninsula Gennervilliers, will not be able to purify more than a portion of the sewer water of Paris; but, foreseeing every eventuality, M. Ad. Carnot, Chief Engineer of the Mines, has searched in the neighborhood of the capital for ground, which, because of its geological formation, its altitude and its situation, would be available for the further extension of the same system.

Ground that is sandy, and therefore permeable and suitable for irrigation, is to be met with in every direction, but all over the west of Paris it forms, as a whole, a surface area of 30,000 hectares.

"There is, therefore," writes J. Rochard, "no fear that the system of purification by soil could ever be jeopardized in the future by the absence of suitable ground in the proximity of the capital; and as the cause has won at last, all that is necessary is to develop it with an activity which will repair the slowness of the past."

To complete this study, I ought to say a few words about the various projects to guide the sewer water and the water-closet discharges of Paris into the ocean. The first of these was laid before the French Society of Hygiene by the engineer, J. Bennfant, honorary member, in these words:

"The conduction of the sewer water of Paris to the ocean is the only remedy answering the exigencies of public health, and the only one which saves for agriculture the fertilizing matters which are carried by the sewers just so far.

"That the city of Paris, realizing its hygienic conditions, may distribute its sewer water for agriculture, it is necessary:

"(1) That its sewer system be complete.

"(2) That the distribution of the water be sufficiently abundant to permit the washing-out of the sewers.

"(3) That it possess the means to construct a canal passing to the ocean."

According to the plans and designs, the proposed canal would have a length of 144,200 metres, so divided:

To pass by the side of the river (Seine)	58,500 metres.
By vaulted gallery	30,000 "
Underground	5,000 "
As ordinary canal	48,500 "
By siphonage	2,000 "
Total,	144,000 metres.

The point of departure of the canal was to be at the works in Clichy, and the point of arrival at the entrance of the Seine at Cantelen, passing on its way through Rouen.

The second project, presented at the Academy of Sciences by M. Dumont, Chief Engineer of Bridges and Roads, in short, takes the sewer water of Paris near Herblay (Seine and Oise), to which place the collectors bring it, and where it is received in an immense reservoir situated at a height of 45 metres. Thence, by a closed brick canal of 156 metres' length, it gains the coast district of La Manche and is emptied into the ocean between Dieppe and Gréport.

The third project, which was planned by M. Fournié, Chief Engineer of Bridges and Roads, connects the sewer water of Paris with that of the suburban communities and even with a part of that of the Department of Seine and Oise, which means a conglomeration of more than three million inhabitants.

The immense canal, a veritable river, with a fall velocity of 8 m. 50 per second, starting at the works at Clichy, was to end after a passage of 209 kilometre in the dawns* of sterile and valueless sands, which are found in Picardie between the mouths of the Somme and the Anthie rivers and which would finally also have been sterilized.

All these projects have called forth violent discussions and given rise to serious opposition. In my humble opinion, they were premature, because the capital experience of Gennervilliers has first to be appreciated by the populations of the sandy districts (coutres) which separate the Department of the Seine from La Manche. As soon as the second stoppage-place for the agricultural utilization of sewer water shall become a success in the grounds of Achères, the forward march will make itself felt with energy, and at this moment the canal to the ocean will impress us as a not agreeable but fruitful necessity for generations yet to come.

Nursing Babies.

Why it is we do not know, but statistics seem to prove that in nursing infants the mortality among those that are nursed from both breasts is but little more than half that of those nursed from one breast alone. We will not attempt to explain this observation theoretically, but, since it is a fact of clinical observation, we must deduce therefrom a suggestion of value to mothers.

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* French "dunes."—Note of Translator.

The German System of Physical Education.*

BY WM. A. STECHER,
Of St. Louis, Mo.

AMERICA is gradually awakening to the fact that education in its highest acceptance is more than a mere training of the mental faculties—yes, that the development and education of the body are of primary importance, because it enables us to bring the mind to its highest state of excellence.

With this awakening there comes also the desire to possess a means of physical training that will answer all the requirements of our school system, and which is adapted to the needs and peculiarities of our own country.

The result is that a number of systems of physical training are offered to the public. Of all those offered but two deserve the name of a system, namely, the Swedish and the German. The others either do not offer enough for all the conditions of our schools, or are but apologies for a system of physical development, or, lastly, are poor imitations of parts of the German system.

A few cities in the East having adopted the Swedish or Ling system during the last years, this system has suddenly gained a prominence that seems astonishing to a body of men whose life-work it has been to give to their scholars, in the form of gymnastics, the very best results that have been attained by a body of thousands of experienced and enthusiastic teachers, mainly in Germany, but also in all other civilized countries of the world. It seems strange to them that a conflict that was fought to a finish some thirty years ago, to establish the precedence of the Swedish or German system, and in which the most prominent men of the time—many of whom are still living and who have a world-wide reputation—took an active part, should again be resumed in America.

The conflict lasted a number of years, and a short account of the case and the statements of the most prominent combatants will greatly help us to see our way more clearly, and aid in choosing a system that will be of the greatest use to us.

The beginnings of German gymnastics are the result of much earnest thought and work of the best educators of the latter part of the last century. The first attempt to introduce into a school something that answered our idea of physical training was made by Johann Bernhard Basedow, who, in his school at Dessau, in the year 1774, after traveling extensively all over Europe, called the "Philantropin," introduced such forms of bodily exercise as swimming, ball games, bowling, riding, marching, dancing, running, besides carpentry and wood-turning. He strove to carry Rousseau's views into effect, namely, "to manage it so that the training of the mind and body shall serve to assist each other." He tried to strengthen the body, so that it could better carry out the dictates of the will.

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* A paper read at the seventh annual meeting of the American Association for the [Advancement of Physical Education, held at Philadelphia, Pa., April 7, 8 and 9, 1892.

At Schnepfenthal, near Gotha, Salzmann, a former teacher at the "Philantropin," in the year 1784, enlarged upon the exercises brought from his former position.

It was Johann F. C. Guts Muths, a teacher at Schnepfenthal, who, in 1785, became teacher of gymnastics there, and who first arranged the exercises then used into the beginnings of our present system. "All that I found out from ancient usages" says he, "from the historical remains of earlier and later antiquity, all that reflection and sometimes chance offered to us, was brought forward for the sake of amusing experiments. Thus the chief exercises increased, and thus, after experimenting seven years, originated the first edition of my 'Gymnastics for the Young,' 1792; my first attempt to call attention to a subject that had been quite forgotten." This was the first manual of gymnastics published in modern times. Guts Muths says of "Gymnastics," that it is "work in the garb of youthful pleasure and merriment," and later on he again defines it as "a system of exercises having bodily perfection for their aid."

Let us here state that the German system of to-day is based upon a wise mingling of both quotations.

In 1795 Anton Vieth, of Dessau, published his "Encyclopædia of Bodily Exercises."

In 1799 Nachtegall, a follower of Guts Muths, established a private gymnasium in Copenhagen, and it was here that Ling, the founder of the Swedish gymnastics, had his first lesson in gymnastics. During this time Ling also learned the art of fencing from a few French refugees.

Gymnastics, however, made no rapid strides for universal recognition in Germany until the time of Friedrich Ludwig Jahn, Ph.D., son of a preacher, born in Lanz, in 1778, who first made gymnastics popular.

After attending various universities, in 1809 he became a teacher in Berlin, in the "Gymnasium zum grauen Kloster." In 1811 we find him as the leader of many patriotic young men, opening the first outdoor gymnasium on the Hasenhaide, then just outside of Berlin. It was here that, in connection with strengthening their bodies, he, by his speech and writings, inflamed the hearts of his scholars to the highest patriotism.

Thanks to the spirit emanating from him, gymnastic societies—Turnvereine—sprang up all over Germany. In connection with Eiselen, Friesen and many other devoted followers, he arranged his system of gymnastics, and published it in 1816, under the name of "Turnkunst,"—the art of gymnastics.

From now on bodily exercises were gradually introduced into the schools and into the German army. Gymnastics for the schools, however, did not receive the form it has at present, until the "founder of modern school gymnastics," Adolf Spiess, in the year 1840, published his "Gymnastics," in Burgdorf, and in 1846 his "Manual for Schools." He emphatically demanded that gymnastics as a whole—not only calisthenics—should form an integral part of the curriculum of every school. At the same time he was the first to show how this could be done—by substituting class-work under the personal direction of the teacher, in place of the squad-work under leaders.

During this time we find the Ling system of gymnastics progressing also. The movements that he used in his system were first practiced in Stockholm, in 1813, "as a remedy for certain diseases."

In 1815 the Royal Gymnastic Institute was founded at Stockholm, and remained under Ling's supervision until the time of his death, in 1839. This institute distinguished between medical and educational gymnastics. After his death Ling's system was adopted according to the directions he gave while on his death-bed. The claim for his system is, "that he never introduced a movement the physiological effects of which he could not demonstrate, and, in his selection of exercises, those which did not exactly produce the effect he desired were discarded—however classical or beautiful in appearance—in favor of such movements as he found to be absolutely essential in producing a harmonious development of the body."

In the year 1848 Major Rothstein, a scholar of Ling, succeeded H. F. Massmann, as director of the "Royal Central Gymnasium of Berlin"—a normal school, under the direction of the Prussian Government, for educating teachers of gymnastics for the schools and the army. Rothstein introduced Swedish gymnastics, and published a periodical, "The Athenæum," in the interest of the same. In the course of his work he attacked the German system, and especially its use of the parallel bars, the latter, he claimed, being positively injurious as a gymnastic apparatus, according to the views and teachings of the Ling system. He had the bars (not only parallel but also horizontal) abolished from his institute. The result created quite a discussion, and the authorities of Prussia installed a commission of two physicians to report on the question at issue. This commission reported in favor of the abolishment, and the result was a conflict which lasted for years, during which gymnastics were brought into the foreground as never before, since the time of the Greeks. All the noted anatomists and physiologists of Germany took an active part. Standing foremost in the fight was Professor Du-Bois Reymond, Professor of Physiology of the Berlin University, who to-day stands among the highest authorities in his line. He not only inquired into the advisability of keeping the parallel bars in a gymnasium, but at the same time made a study of the claims of the Swedish system. The time is too short to quote from other essays of his, or his contemporaries; I, therefore, use only parts of his essays, "About Exercises on the Parallel Bars and the So-called Rational Gymnastics;" Berlin, Georg Reiner, 1862. "The point to be ascertained" says he, "is: Does exercising a single muscle or group of muscles bring about a quick and sure or even a desired degree of physical development?" (The term "physical development" is here used in opposition to "muscular development." With the negation of the above, the whole system of the Swedish gymnastics falls to the ground. Answering the question in the affirmative would necessitate a comparison between the two systems as to which is the better. "As far as I know," says he, "I am the first to attempt to answer this question from a physiological standpoint. Seriously, no one will try to prove the claims of the Ling system. Only one half-educated, one who does not see the arbitrary construction, and to whom a hollow symbolism, a dry schematism, a pedantic terminology and a few anatomical and physiological crumbs seem deep science, and who does not see the errors, will be impressed by Ling's works." (P. H. Ling's "Schriften über die Leibesübungen." Translated from the Swedish by Massmann. Magdeburg, 1847.)

It requires much self-command from any one who knows what science demands to hunt through those works for such valuable information as one can expect to find from a well-meaning but puzzled enthusiast as Ling was, whose life was given to a noble work. A physiological answer to the first question *cannot be had from his works.*

Referring to the works of Major Rothstein on the Ling system ("Die Gymnastic nach dem Systeme der Schwedischen Gymnasiarchen;" P. H. Ling, Berlin, 1847–1859), Professor Du-Bois Reymond says: "The kernel of his books is the hollow, restricted, inflexible system of Ling, and around that small head he has constructed a wig of enormous dimensions, made up of material of all kinds, with the express purpose of hiding the threadbareness of the system." The anatomical and physiological excursions to which he invites his readers are worthless. His treatises on anatomy are extracts from the small compendium of Wilson and Holstein. In his treatises on physiology the author sizes up old views and ideas with the results of modern discoveries, in a manner which discloses the perfect incapacity to give a scientific decision often found in laymen, who think that for a certain purpose they can master and oversee any complicated territory. Again asking myself, if, in the works of Major Rothstein, I find any physiological answer to the first question, I must say that I find no other answer than the citing of the old Greek Platon and Ling, as a proof of his assertions that bodily exercises are much better, if they be simple, but that the German system is to be rejected upon physiological, ethical and æsthetic reasons. And let me state here, that in all the literature concerning this subject I have never found an answer to the question. Dr. Langenbeck, in his answer to the Prussian Minister, speaking of his investigations, says: "That by the isolated exercising of single muscles and groups of muscles, a boy becomes conscious of the means at his disposal for rendering combined movements." "Let me here correct the error," says Du-Bois Reymond, "that at our will we can contract a single muscle. (N. B.—We can move a single muscle; for instance, the biceps and brachii and the vastus internus. The seeming exceptions only prove the rule, that our will can bring about movements, but cannot exert an influence upon a muscle as such. These movements are simply a change of position of the belly of these muscles.) Knowing the position of every muscle in the body does not change this fact. It is a rule, that even the simplest movements are brought about by a set of muscles acting in like manner. A system like the Swedish, that wishes to develop the body by separately exercising all its muscles or groups of muscles, seems sensible enough. But a close inspection shows that on the one hand it does too much, and on the other not enough. It does too much, because it is not absolutely necessary to cultivate each set of muscles separately in order to strengthen the body. A large machine, like the human body, cannot do a great amount of work along any one line without bringing into play many groups or perhaps all the muscles of the body, although not all precisely at the same time. How many muscles remain inactive while executing a pole vault? A suitable rotation of exercises of this kind offers us the means to evade the weariness that exercising each group of muscles separately must naturally bring with it. On the other hand, a system of this kind does too little, because bodily perfection means more than merely bringing every muscle to the highest point of development. I can conceive of a man having the development of a Farnesian Hercules, who, nevertheless, cannot be able to stand or walk, to say nothing of being able to execute complicated movements. The natural use of our bodies depends as much upon the correct co-ordination as upon the strength of our groups of muscles. In all complicated exercises the sense of sight and feeling and also the will-power must ever be ready to act immediately. All bodily exercises, as swimming, dancing, fencing, ball-playing and the like, depend upon a judicious co-ordination of the semi-conscious impressions and end-expressions of the will. Such being the case, these sciences are exercises as well for the nervous as for the muscular system. Having overlooked this second side of every good system of physical training is an unpardonable error of the Ling system, which, when viewed from a physiological standpoint, renders it useless. A body educated according to this system will always remain an aggregate of strongly developed muscles, but nothing more. Enough! We see, by looking at the foundation of the system, that it is just the reverse of rational; it is mainly irrational."

Now, for the third, not less grave, error of the Ling system, which shows this Gymnasiarch as a poor pedagogue. Dr. Langenbeck, in his answer to the Prussian Minister, shows the pitiful psychological foundation of this system as openly as any opponent thereof has ever done. "Swedish gymnastics," he says, "in its pure form, cannot be solely recommended for the physical education of the youth. For weak children, it is too fatiguing; for older, too monotonous." Even a boy wants to do something with his strength. By this system his increasing strength is never brought to his consciousness, because he cannot be led to see the use of the various movements and positions. Swedish gymnastics undoubtedly answer as a means to strengthen and develop the muscles, but it has not the property to give to a boy the consciousness of his bodily force, to strengthen his courage, or to bring about that bodily activity which is so necessary in our lives. "What may I add to this," says Du-Bois Reymond, "except that only sick persons will willingly subject themselves, upon command of their physicians, to the horrible tediousness of the so-called rational gymnastics."

Major Rothstein, in his works, tells us that the Swedish movements "are chosen upon grounds of theoretical principles of the highest order; that an inner relation to moral reality, or to the idea of man, can be discovered therein." "The sameness of nature and soul come to reality in a human being" is brought forward, where all that is wanted is to give a boy red cheeks and healthy limbs. Anatomy and physiology are summoned as aids. "I have had years of experience in a gymnasium," says Du-Bois Reymond, "and, as a physiologist, I have mainly studied the laws of dynamics; but, should any one ask me to sift the exercises of the parallel bars scientific-critically, upon a physiological basis, I would be in no small embarrassment. To tell the truth, a simple vault over the bars would necessitate a very complicated and tedious examination by an expert in anatomy, and one of even greater skill in analytical dynamics. And what would the investigation amount to? To knowledge of questionable value. I have often exercised with renowned anatomists and physiologists, and I cannot recall a single instance where we could have made fuitful use of our theoretical knowledge in explaining the exercises in which we were rivaling to excel."

How strangely does all this weight, placed upon the anatomical and physiological deviation of all their exercises, claimed by the Swedes, contrast with the results achieved by the old Greek gymnasts, who knew absolutely nothing of these sciences?

But enough of these extracts. To bring the controversy, which had been carried on over a period of more than ten years, to an end, the Prussian Government again appointed a commission to report upon the parallel-bar question. This commission was composed of Doctors Lenert, Casper, Juengken, Horn, Houselle, Martin, Frerichs and Virchow. After thoroughly reviewing the question from all sides, they reported ("Centralblatt für die gesammte Unterrichtsverwaltung in Preussen," 1863), that from a medical standpoint, parallel-bar exercises are to be recommended, not forbidden.

The result was an order from the Minister to the director of the Central Institute, setting forth that the scholars of said Normal School be hereafter instructed in the use of the parallel and horizontal bars.

That was the end of Swedish gymnastics in Berlin. Even with the official backing of the government it could not be upheld. Shortly after that, Major Rothstein resigned, and the German system found itself reinstated in the Normal School of the capital of Prussia.

Since that time this system has continually been improved by the experience gained from practical work—"Grau ist alle Theorie," says Goethe—therefore, it has been our aim to put all theories to a practical test before adopting them. Do not for a moment think that because we have an abundance of exercises we take every possible movement into our system. Far from it. This abundance is brought about because our system is all-embracing. We distinguish between gymnastics for the school, for the army, for association of adults, and for the sick. Each branch is again subdivided to meet all the needs of each case.

The German system may be divided into six large groups or classes of exercises, namely:

(1) Tactics—embracing marching in all its forms, from a simple turn to all the complicated forms of a Reigen or evolution.

(2) Calisthenics—embracing four exercises; short and long wands, dumb-bells, rings, and clubs.

(3) Fancy steps (mainly for girls)—embracing all the movements, from a simple galop to the most complicated forms executed by expert dancers.

(4) Apparatus work on the horizontal bar, parallel bars, long and side horse, buck, rings, ladders, poles, ropes, round swing, see-saw, balance boards, swinging boards, pulley weights, storming boards and vaulting table.

(5) Popular gymnastics—as high, far and deep jump, hop, step and jump, running, hopping, putting the shot or a stone, throwing the javelin and discus, lifting and putting up iron weights and stones, pole vaulting, swimming, skating, fencing, boxing, wrestling and shooting.

(6) Games and plays, the enumeration of which would take too long. Let it suffice that Guts Muths published our first book of games in 1793. Let me state here again, that because our system is all-embracing, we have so many kinds of exercises at our command. This by no means implies that we use all of them in every branch of gymnastics. I will here speak only of exercises for schools and associations. These exercises have been divided and arranged, firstly, into movements suitable for males and females, and again into such for children and adults.

The exercises for children have again been divided into six to eight grades, as the case may be, so that they correspond with the number of school years of the common and grammar schools.

The exercises of each grade have been selected carefully and arranged for the class of special teachers. This has been done not only in the case of the calisthenics, but also for the tactics, fancy steps, apparatus work and games.

The results of the experience of thousands of teachers have been used to determine exactly what can be done by this or that grade, what is more interesting and beneficial for this or that sex, and so on. All these divisions have been made, keeping the pedagogical rule plainly in view, that every grade must have exercises that distinctly belong to it, and that new movements are built up upon what scholars have learned before.

There is no other system in existence that has so carefully prepared and built up its work for all classes, from the tots of the Kindergarten along through all forms of budding man or womanhood, to those forms of exercise that we still have our old gray-haired men performing.

But what our system needs, and that has stood in its way here in America, are competent teachers; men and women who have made the study of gymnastics the aim of their lives. We do not believe that this science can be acquired any easier than any other. To be successful in our work, a teacher must, from the very beginning, have the qualities of a pedagogue in him. Then he must master the whole field of gymnastics with its auxiliary sciences. He must know his work by having gone through it practically, for no theory will help him teach something that he never has done personally. He must be able to adapt his exercises to the condition and needs of his class. Weather, age, sex, the surroundings and so on must all be taken into consideration by him. I cannot state the spirit and tendency of our system better than by citing Jahn, who so clearly and beautifully says: "Gymnastics must be practiced in accordance with the spirit of the age, and must be adapted to the needs of Heaven, earth, country and race." And so it has been. German gymnastics present quite a different aspect in America to-day than it did forty years ago. It has ceased to be distinctly German, and is gradually coming to be the American system.

During the last year some of our most prominent educators have taken a stand against all systematic bodily exercise, claiming that this offers no recreation to scholars after much brain-work. The point made is that brain-work and systematic exercises both exercise the high nerve centers, and that systematic physical exercises, instead of relieving these centers, again brings work to them. I acknowledge the point as being made when one thinks of the exercises as conducted under some systems, or by teachers who are not specially trained for such work. But this statement does not hold true in all cases. It is one of those theories that are not upheld by practical experience. Almost daily experience has taught us that one cannot offer to a class that is dulled by an excess of mental work any better recreation than ventilating the room, having the scholars rise and giving them a few lively exercises that send their blood coursing through their veins and brighten their dull eyes. Yes, you may even use music to help to do this. Let me assure you that this very same class of children will do better mental work after five minutes given to such exercise than they did immediately before. Only do not, in cases of this kind, give your scholars a set of exercises arranged ostensibly according to the laws of anatomy and physiology, for if you do, they will surely break out in open revolt against such usage as soon as these exercises have lost the attraction of novelty.

Allow me here to offer the experience of the gymnastic societies (Turnvereine) of the United States, many of which have been in existence since 1848 or 1850. Every society has its gymnasium for children and adults. The scholars enter these gymnastic schools of their own free will. The class-hours for children are directly after they have been dismissed from the public schools: the men come in the evening, the ladies usually early in the afternoon. These schools have an attendance of over 40,000. The majority are naturally German-Americans, but I am glad to be able to state that the number of Anglo-Americans is increasing yearly.

I now ask, How could we keep this yearly increasing mass of scholars, if our system did not offer them something not found in others? Is it to be supposed, that, if the moment they left their brain-work in the schools and entered our gymnasia, we, by our exercises, would again mainly tax their brain, we could have held these classes for a period of over forty years? Here practice shows, as far as our system is concerned, that theory is at fault. How often have scholars of my class, of older men, composed mainly of doctors, teachers and business-men, at the close of a lesson said to me, "This evening I felt so overworked that it cost me a great effort to come to the gymnasium, but now I feel like a new man." How could this be the case if our exercises had again exhausted these brain-workers? Allow me to recall the words of Director Lion, who, years ago, when speaking of the effects of systematic gymnastics upon him, said: "In sorrowful hours, when wrath, anxiety and sorrow rose in bitter billows in my heart, so that it seemed as if head and breast would burst, I have, by these exercises, dispelled my cares and found oblivion. Though but for a few hours, yet these were not to be bought for gold."

If the American public will adopt a system of physical training, they must adopt one that has life. They must have one that answers for all needs, be they those of the public schools, colleges, universities, associations or the army. They need a system that possesses the quality of conforming to the needs of our country. The system that answers all these requirements is the one we represent.

I append a list of larger cities in which our system is taught in the public schools:

Kansas City, Mo.; Chicago, Ill.; Cleveland, O.; Davenport, Ia.; St. Louis, Mo.; Milwaukee, Wis.; Columbus, O.; Dayton, O.; Indianapolis, Ind.; Rock Island, Ill.; Duluth, Minn.; Denver, Colo.; Sandusky, O.; Erie, Pa.; New Ulm, Minn.; Canton, O.; also at the Military Academy at West Point, N. Y., the Naval Academy at Annapolis, Md.; Cook County Normal School at Englewood, Ill.; Washington University, St. Louis, and its branches, Smith Academy and Mary Institute, and in hundreds of private schools all over the country.

An Epidemic of Faith-Cure.*

BY HON. SAM'L T. DAVIS, M.D.,
Of Lancaster, Member of the State Board of Health of Pennsylvania.

THE title by which this paper is announced may sound ambiguous, but I expect to show it to be appropriate and even exact, in view of the facts that called it forth.

I do not expect to prove to you that the form of hallucination mentioned has, or will, become epidemic—common sense forbids that. But I do propose to demonstrate the relation of cause and effect, *a priori* and *a posteriori*, between the faith-cure delusion and the extension and high death-rate of contagious and infectious diseases.

It is not necessary or even proper to attack or defend the position that some honest people and more knaves are so fond of assuming, that those who have not the required sort of faith are disqualified as critics.

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* Read before the State Sanitary Convention at Erie, Pa.

Grant that for the sake of peace; it remains true that each must act upon such wisdom as he possesses—walk by the light of his own lamp—and as in this question the wisest men of the entire historic period have been and are in accord, the majority rule will apply here for all the purposes of this discussion. Nor is it any more necessary to assert or deny the possibility or occurrence of miracles. Whatever may have been the fact in the past, miracles as against law do not occur in our days, since all the asserted examples fail before even ill-conducted investigation. The right of religious belief, or unbelief, is justly sacred. However irrational my views may seem to my neighbor, he is bound to treat them with at least formal respect, *so long, and so long only*, as they do not lead me to infringe upon his or others' rights. We concede right here that there are honest, sincere men and women, who believe—more's the pity—that literally and exclusively "the prayer of faith shall save the sick," and that consequently the physician is an unnecessary evil. It is these, more than any class, who have called forth this attempt to meet the real question in the case.

As for the knavish charlatans who encourage this delusion for their own profit, there can be but one opinion among sane people—their place is in the penitentiary, supporting themselves by hard labor at some honest handicraft. No intelligent man, especially a medical man, fails to recognize the importance, the value, the necessity in a certain class of cases, of resorting to mental impressions as a means of relief. There is no difficulty either in comprehending how this may come to pass, even if the process is obscure. But the line between this and the assumptions of the faith-cure illusionists is broadly laid down.

Human reason, human judgment, are of course superfluous, even as adjuncts to the direct operation of the Supreme Will, and as "faith moves the arm that moves the world," of course, given the faith, no more is needed—indeed, any other remedial interference is impertinent presumption. Their logic would be all right if their premises were sound, but "there's the rub."

Now, the educated class, who, after all, dominate the whole public, and shape the future of society, ought to be far enough advanced to agree to one proposition, which, once admitted, I think decides this question. Here it is: The supreme test of any theory is its outcome in practice under average conditions. If a thing won't work on a fair trial, it wants mending; if mended and still fails, it falls. Just here we part company with the literary advocates of faith-cure, or Christian Science, as their bright lights choose to term it. They say: "We care nothing about given cases, or any or all cases; we do not know all the conditions; we have God's promise, on that we rest." And we could afford to let them rest, and the subject also, if it affected none but themselves—for their folly would die with them—but we have a duty to our fellow-men. First, as members of the same human family; then as parties to the social compact; and last and above all, those of us who have the obligation of teachers of medical and sanitary science and conservators of the public health.

"To the law and the testimony"—what are we offered in support of the theory? A case here and there of a nervous invalid, whose enfeebled intellect, will-power, and bed-ridden body, roused by some sudden stimulus, has enabled him—or more frequently her—to rise up and walk. I will not insult your intelligence and good sense with the cases of fractured bones united in an instant, or dislocated joints, or the reconstruction of absent lungs, livers, spleens, and other organs of the human economy, as these are merely evidences that Ananias and Sapphira had a large family before their final misfortune, and their characteristics have been perpetuated to this day.

Where are the evidences of positive arrest or mitigation of epidemics, without proper sanitary measures? And when the greatest of modern investigators made a fair proposal that a special ward in some hospital be made the object of united prayer, to test whether under the same conditions any difference would be observed, why did it receive a unanimous negative and even innuendoes as to its motive? On the other hand, how many and how sad are the results of trusting to spiritual (so-called) remedies for physical evils! Their name is legion, and each of us could contribute one or more. But sometimes the facts take a shape that not only furnishes evidence, but demands action; and such a case I have now to relate. I ask indulgence for suppressing names and precise locality; these proceedings are public, and no good would be done by particularity; the facts are well in hand, and will be furnished to any investigator. It is to be hoped that some of the persons concerned were transparently honest in their delusion, and some of them have not been enlightened, even by the terrible consequences I am about to narrate. Their persistence, in the face of such a calamitous sequence of events, is, perhaps, the gravest feature of the case, and the one which is the best justification for taking your time for its consideration. The cold and unvarnished facts I obtained from a medical gentleman in the neighborhood, as well as several of the most prominent citizens. In a certain school district, within a few miles of the city of Lancaster, Pa., with a population of 35,000, a number of well-to-do and influential families hold "faith-cure" opinions. A case of diphtheria occurring in one of these houses, no physician being employed, the other children were allowed to attend school some ten days, until the sick child was supposed to be dying, when the other children were kept at home to see her die. The next case was in a family living one-fourth of a mile from the first—the children attending the same school. Five cases occurred here, but as a physician was called at once, only one died. Next, two children of a brother of the first family took the disease. No physician, and both died. Next, a cousin's family of three children were stricken down. No physician, and two deaths. Next, the toll-gate keeper's three children; first a little boy. No physician; died; then a sister of the dead boy. No physician; recovered. Abrother of the last two children, living away from home, came to see the little boy before he died; he wanted to kiss him, did so, and in a few days the visitor took ill and died; no physician called until a few hours before his death.

There were in all thirty cases in the neighborhood attended by physicians, seven of them dying; and eight cases treated by "faith-cure," six of them dying. All these cases were within a radius of about two miles; all the children of school age, attending the same school; the teacher belonging to the faith-cure clique, and a sister of one family afflicted and cousin of two others. She visited freely during the epidemic, and permitted the children of the first family to attend school after its appearance at home. When the School Board were informed of the facts, she was required to discontinue her visits, and exclude children of affected families. Meanwhile, the families of the clique, sick and well, interchanged visits, met for prayer; public funerals were held for the diphtheria victims; and though the bodies were not taken into the church, friends and relatives assembled at the houses of mourning to eat together, as is the custom in the country. While attending a case in the house where the first two cases occurred, my informant learned that not even simple household remedies were permitted, such as greasing the throat and neck, teas, etc.

In God's name, is it possible in this enlightened age that we must be called upon to record such acts of cruel negligence, and within the confines of the Commonwealth of Pennsylvania! Here is a neighborhood invaded by a destroying scourge; no attempt made to arrest it; no fundamental law to protect the helpless innocents! The school a center of infection, and every means of spreading it in full operation—public funerals, free visitation, no isolation of cases, no human means used. What results could follow but those recorded? Families dismembered! Lives sacrificed! Homes desolated! Helpless children deprived even of paternal ministrations. It is with the utmost difficulty that one can hold himself down, even in cold black and white, to permissible expression of contempt for the folly, and indignation for the presumption of those who are responsible for such events. We seem to hear the blood of neglected innocence crying from the silent tomb for vengeance—not on their deluded parents and friends, for whom we ought, perhaps, rather feel compassion, but for the knaves and charlatans who stand behind them, and the country which does not protect their young lives from the fell destroyer when possible to do so. I must not omit stating that these believers in "faith-cure," who meet weekly in one another's houses for prayer and consultation, have several among them who have been to New York for instruction, which is given free, but a "voluntary fee" is accepted and, no doubt, expected.

I cannot trust myself to comment further on this subject. The practical question is one of *duty*. What are we going to do about it? If we, as physicians and sanitarians, have any duties to the public, it would seem we need look no further for one of them. It is only justice to the State Board of Health to recall that for the last seven years, or since the Board was established, we have been knocking at the deaf-ear doors of the Legislature with our hands on our mouths and our mouths in the dust, praying and imploring it to give us authority to organize local boards of health in every school district in the State. Our supplications have received the cold shoulder, and hundreds of lives are being yearly sacrificed through contagious diseases in the several districts which might be averted. In view of such facts as those narrated, every one of us should be inspired with new zeal to create a healthy public sentiment that will demand and secure proper legislation for the protection of the first object in search of by the framers of our constitution—life—without which "liberty and the pursuit of happiness" don't count.

What is the most practical method? A friend, with whom I discussed this matter, coolly remarked: "Well, the refusal of tested and approved means of relief in sickness is suicide; we can't punish that, and it is a good riddance of fools. But the denial of such means to others, especially to helpless children, is murder, and should be punished as such." The logic is sound, and many of us are ready to say *amen* to its conclusions; but public enlightenment and public conscience are far behind that standard, and we must deal with things as we find them. What is the present scope of practical legislation? Several things, the more important of which I briefly note:

(1) All cases of contagious disease to be reported to constituted sanitary authorities, and enforced by penalty.

(2) Compulsory isolation of contagious diseases.

(3) Prohibition of public funerals in contagious diseases—enforced by penalty.

(4) Exclusion of children of infected families from schools and public gatherings—enforced by penalty.

(5) Application of the laws governing the practice of medicine to the so-called teachers and practitioners of healing the sick by faith-cure, Christian Science, or whatever name they may assume.

There is nothing in this that should call out objection from any one, and when I proceed to dispose of objections that will be made, it is not for your instruction, but to complete the subject as addressed to the public. I make no apology for radical measures, having been long ago satisfied that no others avail in dealing with serious evils.

We shall hear much of interference with "personal liberty" "constitutional privilege," "religious rights," and so on. Fortunately the highest authority has covered a large portion of this ground in dealing with another question. The Mormons of Utah raised a definite issue of religious privilege against national law, and the highest tribunal decided it upon ground broad enough for the purpose here proposed. So I have only to add: What is a government good for, that cannot, or will not prevent the diffusion of deadly poison among its defenseless subjects? Why may I forbid my neighbor to dump garbage before my door if he may send his children to carry diphtheria or scarlet fever into the school among my little ones? The questions answer themselves; the Supreme Court has covered them, and I can afford to leave them right here.

But we are told that such legislation, if at all practicable, will be inquisitorial, expensive, and, therefore, unpopular and short-lived. Inquisitorial, perhaps—there is such a thing as too much freedom of some individuals in all communities, which means oppression to the mass, and a little inquisition in our case would have prevented far greater evil. Socialism is undeniably right in holding that what is needed for all must be conceded by each. Expensive? Somewhat, no doubt. But how much more expensive the neglect? Will the objector estimate the cost of the young lives sacrificed in the faith-cure epidemic I have described, and then count the few dollars for proper sanitary protection? Unpopular? That is a question of fact. A generation ago the free-school system was fought on the same ground; this year the State gives five millions. The evolutionists stand on impregnable ground when they compare the facts of past and present. When Abraham made his son carry up the hill the wood with which he proposed to burn the boy's murdered body, "his faith was counted to him for righteousness," but it was in an age when the people around him sacrificed their first-born to idols. A few years ago, a Massachusetts fanatic sacrificed his little daughter for the same asserted reason, viz.: Divine command, and his faith was counted *him* for a residence in the penitentiary, escaping the halter from doubt of his sanity. By this time let us hope Pennsylvania is ready, at the coming session of the Legislature, to follow that worthy example by adopting measures to prevent and punish all forms of child-murder, whether arising from cruelty or superstition. Short-lived? Never believe it. Give us competent sanitary laws for a few years, and an intelligent Governor would protect us from repeal; and the people, once feeling its benefits, would bury any man offering to interfere with it so deep that his contaminating influence would never be able to appear above the surface.

My justification for taxing your patience so long is found in my own appreciation of the grave importance of the subject, and I hope it may be fully discussed, and its main objects may find place in your Committee on Legislation.

Microscopic Examination of Water from Public Water-Supply of Erie, with Remarks Thereon.*

BY DAVID N. DENNIS, M.D.,
Of Erie, Pa.

FROM the published title of my subject I fear you will expect from me some lengthy and accurate microscopical and biological analysis of the city water. I do not profess to be an expert in this line, and only wish to give some points for discussion and put forward a theory. Is our water good or bad? Twelve years ago it was excellent.

Some two years ago a member of my household contracted typhoid fever. For my own satisfaction and the safety of my family, I took a specimen of water from the hydrant in the kitchen, placed it in a bottle that had been washed with a solution of bichloride of mercury and then thoroughly washed with boiling water. This was filled with the city water, sealed, and sent to

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* Read before the State Sanitary Convention, at Erie, Pa.

Philadelphia for examination. The chemist and biologist who examined the specimen is a gentleman with whom I am personally acquainted, and one whose word I can thoroughly trust. After the examination he sent me a letter, of which the following is an extract:

"The water received from you is in very bad condition (underscored), and, moreover, contains recent cesspool drainage. I am of the opinion that it is well water, and carries the dejecta from typhoid sickness. Please advise me as to the facts, location and surroundings."

Shortly after this, possibly a month, the Water Commissioners of this city sent a number of sealed packages of water, taken from the bay and from private wells, for analysis. The specimens were sent to the same chemist who examined my specimen. After making the examination the report thereof was sent back, when, strange to say, the bay water was free from sewerage matter and germs. The well water was polluted in nearly every instance, and in some, numerous typhoid germs were found.

The theory which I wish to put forward to explain this seeming difference in the examination is this: The specimen sent by me was taken after a severe wind-storm. The water was very oily and filled with sediment. The specimens sent by the commissioners were taken from the bay when the water was clear. The inference is, that the sewerage contained excretions from a score or more of typhoid and dysentery cases, which would empty into the bay from the several main sewer pipes. This would, as a matter of fact, precipitate, if the water was calm, and an exceedingly small percentage float away, as there is very little current in the bay. During a storm, the water, as you know, is very rough, and the waves run high. The sewerage which had precipitated, and the sewerage which was being emptied during the disturbance, would now be churned and thoroughly mixed with the water. Thus, should a specimen be taken at that time, it would show all the germs that were being emptied into it. This, I think, will explain the seeming difference in the examinations.

The question of the advisability of emptying the sewerage into the bay I think can scarcely be argued. When a pumping station is situated a few hundred yards away from the main sewer, I doubt if any one would try to argue that it was wholesome, much less pleasant to contemplate. As the city increases in population, the evil, of course, will increase, as the water in the bay will, in time, get to a point nearing saturation, when the sewerage matter will not precipitate as thoroughly as it does now, and when a quantity of free matter will be directly pumped up, and served throughout the city with the water-supply. If the water is taken from the bay, the sewerage should be emptied into the lake, or disposed of in some other way; or, better still, the city water-supply taken directly from the lake, where there is no chance of contamination, and the bay receive the sewerage.

If this paper succeeds in drawing out the ideas and opinions of the gentlemen present who are versed in these matters, and if the inhabitants of the city can thereby gain pure and more wholesome water, it will have served its purpose.

THE ANNALS of HYGIENE. ✣ ✣

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EDITORIAL.

The Prevention of "Bright's Disease."

IF we might claim a special potency, in the promotion of longevity, for one factor over another, we would, at times, be inclined to yield the palm to the early recognition and regulation of the conditions that might be aptly termed the initial stages of Bright's disease.

A very extensive experience with this disease has induced us to reflect most profoundly thereon, and we are quite firmly of the opinion that kidney derangements are infinitely more prevalent even than any one suspects, and that the influence exerted by faulty kidneys is infinitely more widespread than is usually accepted as the fact. We have, more than once, enunciated our belief that when the age of forty-five has been reached, there are very few persons who would be found absolutely sound upon careful physical examination, and we feel quite strongly that a universal physical examination at and subsequent to this age would demonstrate that comparatively few are wholly free from some derangement of the kidneys; not necessarily marked organic disease, but a disordered condition that is exerting its influence upon the rest of the body, and that will ultimately eventuate in incurable organic disease.

Prevalent as "Bright's disease" is usually believed to be in this day and generation, we are confident that it is much more frequent than most of us suspect. Of all insidious, deceitful, nasty, mean, contemptible diseases, "Bright's disease" takes the lead. There is no other organic affection that allows its victim such an appearance and sense of health, while it is leading him, confidingly, to destruction; there is no other disease that gives so little evidence to the senses of the patient of its ravages; slow, as a rule, in its progress, the law of tolerance so accustoms the system to the effects of the disease that a serious departure from health may be not even suspected until within a very short time of an inevitably fatal termination.

Such is this disease; terrible to think of, yet shorn of its terrors when rightly understood. "Forewarned is to be forearmed," and in no situation is this saying so eminently true as in connection with the disease in question. Is "Bright's disease" preventable, and can the tendency thereto be recognized before the disease has become established? The answer to these questions can best be given by relating a bit of recent personal experience.

A gentleman who had been reading the articles recently published in this journal on "The Beginnings of Disease" wished to have made such an examination as was therein outlined. He was only 34 years of age, and the investigation resulted in showing him to be absolutely sound with but one single exception, which should be called rather a morbid condition than a disease. The specific gravity of his urine was very high, much higher than normal, and he was passing more than the normal amount.

There was no disease of the kidneys, but his urine contained more solid matter than it should have done. A further investigation revealed the fact that this excess of solid matter was due to an excessive amount of urea. It was now learned that our patient was a great meat-eater; three times daily, for every day in the week, did he eat meat; he consumed more than his system could assimilate; this excess became, therefore, excrementitious, and it fell to the lot of the kidneys to remove it from the body. They were equal to the task and were doing all that was demanded of them, but, in so doing, they were being overworked. If persisted in this overwork would have eventuated in disease—in chronic, incurable, organic "Bright's disease."

In this particular case a regulation of the diet and exercise will, undoubtedly, be the means of saving this man from an incurable disease. So on, in many ways, would an examination reveal a condition that was leading its possessor on to certain disease, yet that was readily remediable.

Still another view: let us suppose that one has "Bright's disease;" well, heretical as it may seem, we unhesitatingly say that of all chronic diseases we have the least fear of this one. What we mean is, that if detected before it has advanced very far we believe that if one will practice only reasonable precautions, he may live just as long with as without "Bright's disease." We are quite confident that if post-mortem examinations were made of all who die, we would be surprised to learn in how many instances the disease had existed and was well advanced, wherein, during life, its presence had been never suspected, death having occurred from some other affection.

The points we would make and emphasize are, that if the kidneys were properly cared for, if the people at large would have more thought for these important organs, if they would so regulate their lives as to conserve the integrity of these organs, if they would attach to them the importance that they merit, the sum total of human life would be greatly increased, and the amount of vague, ill-defined, indefinite and apparently inexplicable ill-health would be greatly lessened.

Impulse: Emotion *versus* Will.

THAT the majority of persons are guided and controlled by impulse or emotion, and, at the same time, unreflectively, think that they are guided by will, no one, who is observant of humanity, can for one moment, doubt. Most persons instinctively deceive themselves into mistaking impulse for will.

A thoroughly sound, evenly-balanced person can safely trust to impulse, for in such an organization the instinctive, unreflective workings of the mind will be what they should be. But such perfect human mechanism is so rare that emotions or impulses are but seldom what they should be. Could we conceive of a perfect humanity, then might we have an Utopia, in which impulse or emotion might be safely accepted as the incentive to action, but with degenerate humanity it is requisite that will shall control impulse, else we make many false steps.

"Look before you leap," "Think twice before you speak once," "Speech is silver, silence golden," are all sayings that have become proverbial, because they are typical of the wisdom that we all admit but few practice; they all really mean that will should control impulse.

If this be true, as it is, in every aspect of life, it is pre-eminently true in matters pertaining to health. As well expressed by Dr. George M. Beard, it does not take much experience in practice for a physician to learn that men die who might just as well live if they resolved to live, and that myriads who are invalids could become strong if they had the native or acquired will to vow they would do so.

In a pre-eminent degree did General Grant possess the attribute of strong will, and we think that it is usually conceded by professional men that he lived, in the face of a fatal disease, until he had finished his "Memoirs," because he so willed. Every physician of experience must have frequently seen instances wherein the controlling power of the will over the body has been made manifest, and, conversely, cases wherein a weak will has allowed the reign of impulse to present apparently hopeless disease and even death itself.

Most thoughtful persons are now fully prepared to agree with us in reference to the power of will over matter, but with a really fatalistic tendency they will argue that strong will is an attribute and not an acquirement.

Here, we take issue: will is an attribute, we will admit; but it may be an acquirement, we must contend. One may inherit a strong will as he may inherit strong muscles; but he may also acquire a strong will as he acquires muscular strength.

No one will, for a moment, question that muscular exercise will increase muscular strength; so also must we argue—novel and surprising as the suggestion may seem—that will exercise must increase will power.

Use means exercise; if we alternately open and close the hand, we are exercising, and, thereby increasing the strength of the muscles engaged in these actions; if we use the will, we are thereby exercising and strengthening the will; if we yield implicitly to impulse, we are, thereby, exercising and strengthening the impulse—the ofttimes misleading attribute or faculty of mentality.

As motion is the medium of muscular exercise, so reflection is the agency of will exercise. With the majority of persons impulse is the incentive to action; if, then, when impelled, we hesitate to act until, by reflection, we have judicially decided upon the wisdom or folly of the impulse, and when this decision has been reached, we act firmly, unfalteringly, resolutely, upon such decision, we have, by this course, been exercising our will and subjugating our emotions, and, by perseverance, we will ultimately so develop the latent will power with which every individual is endowed, that impulse or emotion will no longer guide our actions.

To repeat, there are some persons whose minds are so normally balanced that impulse always directs them into the right channel, but such persons are so infinitely in the minority that no rule can be deduced therefrom.

Occasionally we hear it said of some unusually conspicuous man, that he makes up his mind very quickly, acts upon it at once and is generally right; in such cases impulse, emotion, will, are really one and the same thing ; that is to say, because of an unusually well-balanced mind the impulse springing from this mind is a safe guide to action, and it does not require the controlling influence of will. With most of us, however, the case is different. As a rule, impulses are not to be trusted ; the will may be said to be the impulse matured by the fostering influence of reflection, and such only should be the guide to action.

It is the impulse of a mind, more or less degraded by generations of offenses against nature, that impels toward violation of nature's laws, and he who analyzes his impulses and guides his actions by the result of this analysis will rarely go contrary to the teachings of hygiene or of nature. It is impulse, and not will, that is responsible for disease, and will, not impulse, that will serve to lift humanity to a higher plane of physical well-being.

Small Change as Germ-carriers.

THE rough surface of a coin affords an excellent opportunity for the lodgment and retention of germs, and the frequency with which these coins may be supposed to come in contact with diseased mouths and hands is good ground for the suspicion that contagious disease is not infrequently propagated in this way, a fact to which we have several times before called attention. We quote the following paragraph from the bulletin of the Iowa State Board of Health, which well sets forth the danger of rinsing coins in the mouth :

"As we were coming down Sixth Avenue on an electric car, a few days since, we noticed an aged and infirm colored man who was seated opposite, take from his mouth a silver 'quarter,' covered with saliva. He rubbed it on his pants, turned it over, rubbed the other side, and handed it to the conductor to pay his fare. Now, as he was enfeebled by age, he was peculiarly liable to contract some infectious disease, had the money been in the hand or mouth of some one so diseased. We noticed, also, that he had very badly decayed teeth, covered with tartar, which, doubtless, were the habitat of bacteria, some of which may have been disease-producing. There is no telling what delicate lady's mouth this same 'quarter' may have gone into that same day. Now, some of the pathogenic or disease-producing germs are exceedingly tenacious of life. They will bear freezing or drying, and may preserve their vitality for months—even for years. We don't wish to cast any reflections upon the fair sex ; but, for some reason or other, ladies, much more frequently than men, make pockets or purses of their mouths, since it is not the fashion to have pockets in their dresses. We suggest that it is neither elegant nor safe for a lady to subject her mouth to such vile usage."—*Good Health.*

NOTES AND COMMENTS.

Good Roads.

An earnest advocate of better country roads very truly argues that they would be conducive to health, as they would encourage outdoor life. They would encourage inter-visiting in the country, among farmers, and render trips to town, or anywhere, at any season, pleasant and enjoyable. All this means better contentment, greater happiness, better health, and greater wealth.

Second-hand Teeth.

We do not know that there is anything specially detrimental to health in the use of second-hand teeth, an industry in which has recently been unearthed in that modern Babylon, New York City, where they are bought at pawnbrokers' sales for from ten to thirty cents and resold for three dollars. They are, probably, all right for those whose sensibilities are not shocked by the idea, but, if any of our readers contemplate so equipping themselves we should suggest a thorough cleansing before insertion.

Hair in the Stomach.

Actual observation teaches us that it is not an uncommon practice for young girls to bite off the ends of their hair and swallow them. That it is likely to prove dangerous they do not, probably, know. Accumulating, little by little, these hair-ends may, in the stomach, form ultimately a tumor that will destroy life, as occurred recently in Germany, where, after death, a compact mass of hair, weighing nearly two pounds, was found, completely filling the stomach and protruding into the intestine.

The Tooth-brush.

We are well aware that the more cultured classes—those among whom we find our readers—are quite alive to the importance of tooth-brushes; but we do not think that their real, true necessity is appreciated by any one. The mouth is really a chemical laboratory, most favorably equipped for the development of bacteria of many kinds. The particles of food left between the teeth, in the cavities thereof, and attached to the walls and roof of the mouth, readily undergo fermentative changes, thereby producing agencies that act not only injuriously upon the teeth, but may even cause sore throat, abscesses in the neck, and swallowed into the stomach, and absorbed therefrom into the blood, may unfavorably impress the whole system. It seems like a trifling matter to write so much about, but we would strongly recommend a thorough brushing of the teeth and rinsing of the mouth after each and every meal as a potent agency in the preservation of health.

Drying Wet Shoes.

A recent method suggested for drying shoes that have become wet by the rain, is to heat some pebbles in a pan and insert them into the shoe. It is said they do the work quickly without in any way injuring the leather.

Artificial Teeth.

We have before, but we would again urge upon those of our readers who wear artificial teeth, the importance of cleanliness. Morsels of food lodged between the teeth will putrefy, just as they would if the teeth were natural, and, while they cannot decay the teeth, will produce a sore mouth. As much care should be had for the cleanliness of artificial as of natural teeth.

Hygiene in the German Army.

Is there not some relationship of cause and effect between the facts that the greatest army of the world of to-day is the army, in the discipline of which, hygiene plays such an important rôle? Owing to this fact (it can be due to nothing else) the death rate of the Germany Army that was 6.9 in 1868, has fallen to 2.3 in 1888-89. Marvelous and satisfactory as this single fact is, it is not the greatest result that this hygienic discipline has secured. Because of it, when a man has served his time and retired from the army, he is possessed of such a capital of vigor that he is enabled to settle down to other pursuits with an assurance of the happiness that waits on health and of the ability to create and rear a healthy progeny to bless and comfort his declining years.

The Hygienic Characteristics of Old Graveyard Soils.

"Proskauer (*Zeitschrift t. Hygeine*, XI, 1) has been giving the soil of the old Berlin Hospital graveyard a thorough examination. This yard had, up to thirty-one years ago, been for many years in use as a place of interment. To the depth of 5½ feet the ground was full of human bones and even remains of coffins. The decomposition of all soft parts, however, had been so thorough that neither chemically nor bacteriologically was the soil any more objectionable from a hygienic standpoint than that from the Berlin soil as ordinarily found. Nitrogen compounds were present in no larger proportion than usual, and below a depth of two metres no micro-organisms could be found either in the soil or in the ground waters. Altogether, Proskauer considers that an old cemetery is as healthy a place to settle down upon as any neighboring piece of land." With all due respect to Proskauer, we do not agree with him. No amount of science can overcome our objections to graveyards as places for human habitations; and since, in this broad land of ours, there is no need, thank God, to crowd the defenceless dead from their last resting places, we will still hold to our old-fashioned idea that cemeteries ought not to be transformed into building sites.

Do Not Poke Fun at Dyspepsia.

"Take care of your health," President Patton tells the Princeton boys. "You may not need binomial theorems, but you will need your digestion every day. I wish that, years ago, I had thought more about my own health. A frequently-recurring headache, a bad appetite and sleeplessness are solemn warnings that you must heed. Dyspepsia is not a thing to be made fun of."

A Cheap Disinfectant.

The nitrate of lead is the cheapest disinfectant known that fulfills its intent. It does not, however, prevent putrefaction. The chloride of lead is much more effective in all directions. It is made by dissolving a small teaspoonful of nitrate of lead in a pint of boiling water. When both are thoroughly dissolved, pour the two mixtures together, and when the sediment has settled you have two gallons of clear fluid, which is the saturated solution of the chloride of lead. A pound of nitrate will make several barrels of the liquid. The nitrate of lead costs from eighteen to twenty-five cents a pound at retail.—*Medical Bulletin.*

Hot Baths.

We are inclined to agree with Dr. Benjamin Howard, who, in the *Lancet*, signifies his approval of the Japanese custom of taking a bath with the water, not cold, as in England, but as *hot as it can be borne.* But these hot baths must be taken at night and from the bath one must go, at once, to bed. Dr. Howard thinks that this very hot bath promotes softness and suppleness of the skin, and will be particularly grateful to sufferers from rheumatism. Now, do not indulge in a hot bath, go out of doors, catch cold and then blame us for giving this suggestion. We believe in hot baths (if the heart is sound), as hot as you can bear them, but, to repeat, they must be indulged in only as an immediate preliminary to bed.

The Relief of Piles.

So many persons suffer unnecessarily from piles, considering them not of sufficient importance (unless very aggravated) to seek medical advice, yet being continually fretted, worried, nagged thereby until there is real danger of having an otherwise good disposition ruined, that we feel warranted in offering a trifling suggestion that may prove of some value. Dr. Lauder Brunton, who is an eminent London physician, suggests that a person so afflicted should secure evacuation of the bowels at night, in order to secure rest in the recumbent posture after defecation; also to use a soft sponge and water rather than paper, and to introduce a pledget of animal wool dipped in hamamelis.

Dietetic Value of Pineapples.

If the observations that we find recorded in the *Medical Age* are reliable, and we doubt not that they are, we have, in pineapple juice, a most potent aid to digestion. It would seem that it possesses the power to digest albuminoid articles to a very great degree. Remember, that it is the juice that is commended, from which we would conclude that a course of pineapple would furnish a most healthy and acceptable finale to a dinner, if the precaution be observed of swallowing the juice and rejecting the pulp, a practice that ought, by the way, to be observed with the orange.

A Precaution in Fumigation.

It would seem unnecessary, had not fatal results proved otherwise, to warn against entering a room that has been disinfected with sulphur until a goodly amount of air has entered first. If a room is properly prepared for disinfection, all the cracks and crevices closed up, and if sufficient sulphur has been burned, the atmosphere of this room will be unpleasant, to put it mildly, and may prove fatal to the human being. It has killed the disease germs, and it may kill the man or woman who has the temerity to enter without having first allowed the entrance of some outside air. Such a case has been recently reported; death was not instantaneous, but it occurred, all the same, in a few hours.

The Hygiene of Young Girls.

While thoroughly recognizing the delicacy of the subject, we yet feel, as we have always felt, that young girls should be, at the proper time and in the proper way, enlightened, by their mothers, as to their functions, their care, and the chief, the noble, the mysterious, the unique and almost divine function that has been relegated to women by the God of the Universe. A little advice, a few talks, would be productive of infinite good in the prevention of the disorders, trifling in the beginning, that ultimate in making motherhood not only a bugbear, but, oftentimes, an impossibility. Very many of the disorders of womanhood are the inevitable results of the ignorance of girlhood, and it is because of this mistaken action of the mothers of to-day that while (as says Dr. Champlin, of Cleveland) the good dame of fifty years ago would show her ten or a dozen sons and daughters, the pride of her life, the hope of her future, to-day we are shown one son or daughter and *a poodle*—often only the poodle—all the hope of the family. If you will look about among your friends you will find that it is rather the mothers of a single child than of a dozen children who are in a state of chronic ill-health.

A Warning to Bon-vivants.

We have never had much sympathy for those whose palate craved the "gamey game" that some apoplectic-looking individuals claim to enjoy. Rotten or "half-gone" meat, be it bird or beast, has never had any charms for us, and we have even felt that it was not with such delectable viands that nature intends the frame of man to be regaled. Hence it is without much pity for the victim that we read in a German medical journal of a young man who after enjoying part of a somewhat "high" goose, was seized with paralysis of a part of the face, lasting for nearly four weeks. Dr. Guttmann, who reports the case, concludes that it was due to meat poisoning—the active agent being the so-called "ptomaines" that are produced during the progress of putrefaction.

Stammering.

In the *Brooklyn Medical Journal*, Mr. Edward Eck, a teacher and reformed stammerer gives some simple rules for the prevention and cure of this difficulty in children. He insists strongly that parents shall not speak sharply to children who have the defect, as nothing aggravates the habit more than fear. The method he uses in his school is as follows:

Let the child stand passively erect, hands hanging loosely; let it inhale slowly through the nostrils, filling the lungs; then let it exhale quietly through the mouth. The child should not raise its shoulders. Repeat this exercise, increasing the breathing. If dizziness ensue, discontinue for a while. The same exercise again, with its hands on the hips. After inhaling let it sound the vowel *a* as long as possible.

Then *a e* with one breath.
Then *a e i* with one breath.
Then *a e i o* with one breath.
Then *a e i o u* with one breath.
Combine vowels with consonants; for instance:
*A*d*a*, *O*d*o*, *E*d*e*, *I*d*i*.
*A*d*e*, *O*d*i*, *E*d*a*, *I*d*e*.
d*A*, d*O*, d*E*, d*I*.
*A*m*a*, *O*m*o*, *E*m*e*, *I*m*i*, etc., etc.

The vowel is the carrier of the syllables or words, therefore no stress on consonants. Then we may proceed with more difficult words, speaking them slowly and distinctly.

After having reached this point, we form small sentences, speaking word after word in a long-drawn manner, as:

G*oo*d m*o*rning.
G*oo*d n*i*ght, d*ea*r mamm*a*.

In those cases where the habit is inveterate special instruction will be necessary—in addition to the exercises given.

The Inoculation of Flavor.

A most extraordinary observation has recently issued from the Department of Agriculture. It would seem that the flavor of tobacco, which is derived during the process of "curing," is due to the action of bacteria, and it has been ascertained by experiment that poor tobacco, when inoculated with the bacteria naturally belonging to fine tobacco, obtains the flavor and quality of the latter. Truly, must we conclude that, with all that we now know, we are yet but beginning to penetrate the mysteries of nature.

Influenza and the Birth-rate.

A somewhat singular observation relative, supposedly, to the influence of influenza upon the birth-rate comes to us from Paris. During the four months of 1890, when influenza was epidemic in Paris, the weekly birth-rate fell off fully one-third what it had averaged for the previous five years, and, immediately upon the cessation of the epidemic, it rapidly rose to its normal rate. The same falling off was noted during the Franco-Prussian War, and also during the cholera epidemic of 1854-5. So thus we see that disease and war are agencies that not only destroy that which is, but retard the development of that which might be. This is a most curious observation, that is well worthy of careful reflection.

City Dust.

Dust, like the poor, we have always with us, nor has Hygeia with her newest brooms yet succeeded in banishing it. Yet there is abundant evidence to show that a dusty street contains more lurking potentialities of mischief than a jungle peopled with the hungriest wild beasts. To the researches of Miquel and others can now be added the results of an elaborate investigation by Dr. Luigi Manfredi of the composition of the dust of the streets of Naples. The number of microbes of all kinds found in it amounted on the average to 761,521,000 per gramme. Remarkable differences in the proportion of micro-organisms were, however, observed in the dust from different quarters of the city. Thus, in the streets least exposed to contamination, that is to say, where there was the least traffic and where the hygienic conditions were most satisfactory, the average number of microbes in the dust was only 10,000,000 per gramme. On the other hand, in the busiest thoroughfares, the average rose to 1,000,000,000, and in some of the dirtiest streets to the enormous figure of 5,000,000,000 per gramme. In this "endless ocean" of infinitesimal life, there was a large number of pathogenic organisms, and the unhealthiness of the street or quarter was directly proportional to the number of microbes in the dust. Dr. Manfredi carefully tested the infective power of the dust, and obtained positive results in 73 per cent. of his experiments. Of forty-two cases in which he communicated disease to guinea-pigs by inoculating them with Neapolitan dust, he found the microbe of pus in eight, the bacillus of malignant œdema in four, the bacillus of tetanus in two, the bacillus of tuberculosis in three, not to mention several other microscopic *feræ naturæ* possessing the power of inducing fatal septicæmia in the unfortunate guinea-pigs on which they were tried. The moral pointed by these facts is that Ædiles should take the Dutch housewife for their example, and wage relentless war against dust and dirt of every kind.—*British Medical Journal.*

Disinfection of Rooms.

The readers of this journal are already aware of the fact that disinfection is a vital precaution in all cases of contagious disease, and we feel that we might add that an occasional disinfection, at ordinary times, can do no harm; it will purify the atmosphere, and may be the means of preventing many cases of sickness that might otherwise entail expense and, possibly, great affliction. For this purpose, one or two teaspoonfuls of an equal mixture of carbolic acid and ethereal essence of turpentine may be poured into a tin dish full of hot water. It will rapidly evaporate and purify the atmosphere. Whenever you are going away from home, it might be well to so treat your rooms, being careful to air them well before again using them.

Hygiene in the Barber Shop.

The fundamental principles of hygiene underlie all progress of refined tastes. It is not much to say that we live in one of the most important sanitary periods of the world. We know some of the beneficial agencies, based upon scientific knowledge, by which health is preserved.

Materson observes: "Men live longer and faster than formerly. A man, in these days of steam and electricity, may do more, see more, know more, and, if wise, enjoy more than generations of his ancestors. But he must learn to understand and obey the laws of sanitary science."

As an instance of our carelessness, observe with what indifference we allow the barber and hair-dresser to wander over our faces and heads with hands still reeking and hot from our predecessor in the chair—comb, brush and puff yet warm from the tonsorial manipulations. No wonder that baldness so soon supervenes on our civilized craniums. Admitted that many of the proprietors of tonsorial shops take pains to keep things clean and what they call wholesome; that their patrons find no fault, but that it is indifference from habit, and they have not the slightest idea of the danger—never give it a thought—they are too anxious to spring forward when "next" is called! Let it here be stated that asepsis is not enough, but antiseptic means to cleanse and disinfect the armamentarium of the barbers is imperatively demanded to avoid danger from the propagation of disease, transmitted by comb, brush and razor, such as eczema of ear and face, herpes, acne mentagra, sycosis, etc.

Buckley found, in 1,000 cases of skin disease, 8 per cent. of barber's itch transmitted by foul razors or other barber's paraphernalia.

No; cleanliness in this matter is not enough. Disinfection with the proper germicides should never be neglected.—*Dr. A. S. Wolff, in The Texas Sanitarian.*

The Leaders of 1920.

They will not be the *goody-goody*, hard-working students of to-day. Please do not cry us down if we dare to assert that too much juvenile mental work is not conducive to adult brilliancy. This line of thought is suggested by the perusal of an obituary notice of the late Dr. Henry I. Bowditch, of Boston, one of the most famous of New England's many famous physicians, who, after a life of extraordinary usefulness, died at the age of 84. The pregnant sentence in this notice thus reads:

> "In college, he was the same warm-hearted, good fellow, straightforward, impulsive, pugnacious, ardent—*although not an ardent scholar*—sensitive and popular, always to be depended upon."

The thought intruded itself upon us as to whether any of our leaders of men ever were *ardent scholars* at college. It would be a most interesting line of research to unearth the present positions of the "first-honor" men of our various colleges of thirty years ago; we do not imagine that very many would be found in very conspicuous positions. Of course, we would not run counter-current to the popular tide of education, but we would ask our good friends to realize that there is something else in this world besides a brain full of knowledge.

Rest and Travel as Therapeutic Agents.

There are some good points made in *The Lancet*, December 12, 1891, in regard to the medical uses of rest and travel. Many of the toil-worn and worried need only to lie fallow for a time and give tired nature a chance of recuperation and repair. To obtain conditions for rest of the right kind is often difficult, for there must be change and variety, and yet traveling is not always restful. Perhaps the ideal rest is a sea-voyage, far from the madding crowd, with its pure and invigorating atmosphere, its constant passive motion without fatigue, its change of scene and novel conditions of life, its freedom from care, worry and excitement. There is, of course, the possibility of sea-sickness and bad weather, the separation from home and friends, and some slight risks. But these are not insurmountable obstacles. The rest and health-seeker must avoid one snare, and that is imprudence on landing. To resume prematurely habits of activity after the luxurious rest of a sea-voyage is the height of folly. Rest on land must follow that upon the water, and all efforts be gradually and systematically resumed. For an ideal combination of rest and travel, *The Lancet* suggests the voyage from Cairo to the Nile cataracts in a Nile steamer. The climate is perfect, and the region abounds in interest. The season is from November to March, and continuous sunshine may be counted upon as soon as Luxor is reached. The nights are sometimes very cold, which is the only drawback to this adorable climate. Travel and rest may also be combined on the Algerian verge of the Sahara. Various oases—as Biskra, perhaps the best known—are accessible by rail from the seaports of Algeria, regions of sunshine, absolute calm and remoteness from the stress and strife of civilization. And there are mountains in Africa that are a perfect delight to the weary of brain and tired of heart. The choice of locality depends upon the balance of symptoms and the insight of the physician.—*Med. Record.*

Inoculation of a Japanese with Scarlet-fever Germs.

A. S. Ashmead, M.D., reports, in the *New York Medical Journal*, September 5, some interesting experiments made with the object of obtaining a modified lymph to prevent scarlet fever in the Caucasian. He reports two tests of this vaccination as follows:

On May 17, I inoculated with scarlet-fever germs a native of Nagona-Ken, Japan, aged 24 years, three years resident in this country. There was no family history of syphilis or leprosy. The germs were taken from the desquamations on the forearm and palm of a German child, aged two years and three months, a patient of Dr. Ernst F. Ruppe. I took them on the twenty-fifth day, pursuant to a suggestion of Professor Edington, of Edinburgh. They were inserted in the left forearm.

The result of this was the development of an areole of intense scarlet, severe inflammation of throat and fauces, headache—but very slight elevation of temperature.

In a second case Dr. Ashmead states: In this second attempt I have produced a condition which may or may not be a modification of the disease, but certainly is not the disease itself.

This case was exhibited, on the sixth day after inoculation, to Drs. Lester and Wolff, at the Willard Parker Scarlet-Fever Hospital. I gave Dr. Lester some of the lymph from the arm. On the seventh day after inoculation the case was exhibited at the Hoagland Laboratory, Brooklyn, to Drs. Bristow, Van Cott and Dickinson. Dr. A. T. Bristow received various products for bacteriological culture, namely, blood from the areola, lymph from beneath the crust, and specimens of the crust itself. I have since left with Dr. Edson, Chief of Contagious Diseases Bureau, New York Board of Health, and Dr. Lester, portions of the crust. I intend to inoculate this case again with scarlet-fever germs, obtained as before, and note whether the same results will follow.

I may observe that, during the whole time of the experiment, the patient was in continual relation with my own children, without any contagion taking place.

I have a half-breed child (Japanese and American), aged four, a foundling, whom I intended to inoculate with pure scarlet-fever virus. Dr. Joseph William Stickler, whose investigations in this line are well known, wrote to me in regard to this case: "I do not consider it safe to do such a thing, unless you are certain that the virus has been attenuated in strength to a degree that will render it a safe agent to use; you cannot tell prior to inoculation just how susceptible your subject may be. Hence the impression made on the system may be very severe or very moderate. It may be severe enough to cause death."

I, therefore, do not feel justified in making this attempt. But perhaps the presumably attenuated virus obtained from my Japanese subject may be used with safety.—*Medical Age*.

Handwriting and Hygiene.

It will be remembered that at the late International Congress of Hygiene and Demography, in Section 4, which was concerned with the Hygiene of Infancy and School-life, a resolution was passed in favor of the teaching of upright penmanship or vertical writing, on the ground that spinal curvature and short sight are caused by the faulty position of the youthful student, which is necessitated by the slope of the letters. We can all of us remember the trouble of learning to write, and the mental and physical toil which the making of our first pothooks and hangers involved. The number of muscles put in action when a person is writing is prodigious, and it is probable that in beginners every muscle of the body must yield its assent before the graphic symbols trickle from the pen. The fingers, wrist, elbow and shoulder must all be held steady. The spine must be rigid and fixed below as well as above. The pelvis must be firm, and to this end the child often gets a support by its feet from the legs of the chair. The thorax is more or less rigid, and its movements are determined more by the work of the hand than the respiratory needs. Lastly, the knit brows and protruding tongue are unconscious muscular acts which serve to mark the effort, both of body and mind, which the child undergoes when learning to write. It is notorious that in writing our individuality asserts itself in spite of the pedagogue. We are taught certain rules for sitting at the desk and holding the pen, which we ultimately learn to neglect, and finally write in a fashion of our own. The great drawback of writing, as an exercise for children, is the fact that it involves one-half of the body only, and the necessity of fixing the spinal column causes the child instinctively to loll upon its left side while the right arm is working. To what extent the asymmetry of posture is caused by the fashion of sloping the letters it would be difficult to say, but there can be no doubt that the writing-master ought to carefully watch the attitude of the child, and endeavor to make it sit square to the desk and maintain the spinal column vertical. Every child should have a footstool to give firm support to the feet, and the seat should not be slippery, so that the fixation of the pelvis may be easy. Vertical writing is very legible, and if it diminishes to any extent the tendency to sit "lop-sided," it ought to be encouraged. The true remedy for the evils produced by learning to write seems to us to be to teach the child to use both hands, and to practice alternately with either hand. Vertical writing lends itself more readily to ambi-dexterity than does sloping writing, and there can be no doubt that a clerk who could write with equal facility with either hand, and could rest one side of the body while the other was working, would be little liable to writer's cramp and similar troubles. Seeing how enormous is the muscular effort involved in giving the hand sufficient steadiness, and that the brain fag is scarcely less than the muscle fag, it goes without saying that writing lessons should at first be of very short duration. Ten minutes with each hand ought to amply suffice.—*Lancet.*

Physiological Effects of Exercise.*

Dr. W. P. Lombard, of Clark University, member of the American Physiological Society, has recently conducted an interesting series of experiments upon the relation of muscular work to food, work, sleep, time of the day, temperature, and other modifying influences. In his experiments he employed the second finger of his left hand, using only the flexor muscles (those which close the hand); the finger grasps the cord which runs over a pulley, the weight being attached at the other end by means of suitable connections. Each movement of the finger was recorded upon tracing-paper. We quote from the *Sanitary Era* the following summary of some of the principal results as given by the experimenter:

"The weight was raised with all the strength I was capable of exerting and every time I flexed my finger, until a time was reached when I could no longer raise the weight, and this point I called the point of fatigue.

"*Nervous Location of Strength and Fatigue.*—When this point was reached, I applied electricity, which resulted in a firm contraction, showing that the muscles were not fatigued. The will-power was not affected, as when I detached my finger from the weight I had no difficulty in contracting the muscles. Therefore the loss of power must lie somewhere in the nervous system between the finger muscles and the brain.

"*Influence of Food.*—Eating a slight amount of food increased the power of contraction for a short period, after which the curve again descended to where it was before. For the food to show its effect sometimes required ten minutes, at other times half an hour.

"*Sleep.*—I found that sleep exerted a great influence in restoring the strength of the muscle contraction.

"*Exercise of the Muscle.*—For about one week my power steadily decreased, after which there was a steady increase of power until about the twentieth day, when it had increased enormously. On the first day, I was able to raise the weight but thirty times before reaching the point of fatigue, and on the last day I was able to raise the same weight seven hundred and seventy-eight times.

"*The Barometer.*—I found that my muscular power increased with a rising barometer, but fell with a falling one. If the barometer rose during the day, or fell less than on the preceding one, strength increased. On the other hand, if it fell more than on the preceding day there was a corresponding falling off of muscle power.

"*Time of the Day.*—I noted that my power was greater at 6 P.M. than it was at 4 P.M. This at first I could not understand, until I found that the barometer undergoes two diurnal changes, when I found that my strength also underwent like changes. Thus, I was strongest at 10 A.M., and weakest at 4 P.M., after this hour again increasing. It was suggested to me that if such was the case, then my power should be again greatest at 10 P.M., and, after a series of experiments, I found this was an actual fact, and I did have a 10 P.M. maximum power.

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* From *Good Health*.

"*Altitude.*—After trying my power in a valley, I ascended a mountain, and after my system had time to get accustomed to the increased altitude, I found my power decreasing as I reached the lower altitude.

"*Temperature.*—When the extremely hot wave came on, at first I did not notice any loss of power, but on the third day of excessive heat, my muscular power fell considerably and remained low until the temperature fell. As the temperature fell, my power increased rapidly, until at the end of three days' time my power again reached its highest point.

"*Humidity.*—When the temperature was high, I found that as the humidity increased, my strength fell off much more rapidly than it did during a still warmer period when the humidity was low. I also found that even though there was a high percentage of humidity, if the temperature was not high, there was but very little decrease in muscular power.

"*Tobacco.*—One evening, at a time when my power should have been rising toward its maximum, I smoked a cigar, and to my surprise, I found immediately afterward my strength dropped down to a point very near its minimum. This experiment I repeated in the morning, first testing my power and then smoking a cigar, and the record showed a great falling off in strength. This decrease lasted for some time, until the effects of the tobacco had had time to wear off, after which my power again returned."

SPECIAL REPORTS.

State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania.

PRESIDENT,
J. H. McCLELLAND, M.D., of Pittsburg.
SECRETARY,
BENJAMIN LEE, M.D., of Philadelphia.
Pemberton Dudley, M.D., of Philadelphia.
J. F. Edwards, M.D., of Philadelphia.
J. H. McClelland, M.D., of Pittsburg.
Howard Murphy, C.E., of Philadelphia.
George G. Groff, M.D., of Lewisburg.
S. T. Davis, M.D., of Lancaster.
Benjamin Lee, M.D., of Philadelphia.
PLACE OF MEETING,
Supreme Court Room, State Capitol, Harrisburg, unless otherwise ordered.
TIME OF MEETING,
Second Thursday in May, July and November.

A Petition to Establish a Department of Public Health and the Appointment of a Secretary of Public Health.

To the Honorable the President of the Senate and the Speaker of the House of Representatives of the Congress of the United States of America:

The American Medical Association, at its annual meeting held in Washington in May last, unanimously adopted the following resolution :

Resolved, That the President of the Association, W. T. Briggs, M.D., of Nashville, Tenn., appoint a committee of ***thirty*** to memorialize the next Congress to create a cabinet officer to be known as Medical Secretary of Public Health.

This committee have the honor of petitioning Congress to grant this unanimous request, and thereto beg your consideration of some of the views expressed by the Association during the proceedings held on this important proposition.

First, we beg to say that the American Medical Association is constituted of men of distinction in their profession in every part of the Union. For more than forty years its sessions have been held in all the chief cities of the United States from the Atlantic to the Pacific coast, and large numbers of the most eminent teachers and practitioners have participated in its councils. These annual assemblies have promoted scientific research, the formation of State Boards of Health, higher education and the publication of treatises on practical and preventive medicine which form a continuous line of medical progress in the last half of the present century.

The marked progress in medicine and surgery in late years, for the promotion of which European governments have contributed a sufficient support by which men of capacity have been able to give their entire time to hygienic, experimental and clinical research, has not been fostered in our country, where the medical profession has been left, for the most part, to take care of itself, without subvention of the State.

It must be acknowledged that the Government, through the operation of the Surgeon-Generals of the Army, Navy, and Marine Departments, and by the action of the Secretary of State, has authorized liberal expenditures for the establishment of the National Medical Library and Museum, the issue of the incomparable Index Catalogue of the Library and publications of Army records of the late war, and for original researches at home and abroad on the origin and nature of the fearful epidemics brought to our shores by immigrants and other ships; the establishment of scientific posts by the Surgeon-General of the Marine Hospital service at Dry Tortugas for the special and continuous investigation of the causes of yellow fever, the Bacteriological Laboratory attached to the United States Marine Hospital at New York, and to the Surgeon-General of the Navy for the Naval Museum of Hygiene, in whose laboratories chemical analyses of water and food, as well as bacteriological researches, are constantly going on. The conventions of the quarantine service in the last few years have secured great progress toward a uniformity in quarantine laws; and an extensive correspondence has been established by the Surgeon-General of the Marine Hospital with our consuls, so that the quarantine service is constantly advised of the prevalence of epidemics in countries with which we are closely connected in a commercial way.

The work thus carried on is certainly of the highest importance, and avails in the protection of our ports and coast cities from infectious diseases of foreign origin; but the medical profession believes that the Government can, in a far wider way, promote the public good by creating a Department of Public Health, the head of which shall be a member of the Cabinet of the President; and it seems to the Association that this is a propitious time for the inauguration of measures that will place the medical profession in its true relation to public affairs. There is no other profession that excels ours in positive efficiency to sustain public order, comfort and virtue. We possess vast capacity for the direction of society and promotion of human happiness.

At this time the profession is manifesting, in a higher spirit than at any previous period, the power to suppress contagious and infectious diseases. This work was begun by Jenner a century ago, and the scourge of smallpox has been stamped out wherever vaccination is practiced.

There are infectious and epidemic diseases that move round the world in nearly fixed periods, which we need not now particularize; they are frequently the products of squalor and wretchedness of peoples, and are spread far and wide about the lines of commerce. These invisible foes infect the air, the water, and the very food we eat. From the grosser foes of human health, cold, heat and tempest, people have power to defend themselves; but as regards these invisible agents of suffering and death, they are largely helpless, for want of higher knowledge. In their despair they turn to medical science for help, unwilling to trust in the brute law of the survival of the fittest.

What laws are necessary for the full activity of our beneficent profession? We reply: Those that relate to the social state of the people for the prevention of disease. They comprehend an amplitude and purity of water supply; proper dwellings for the working classes without overcrowding or deficiency of light and air; adulterated, or diseased food; complete drainage; disinfection of excrement; the preservation of rivers and smaller streams from pollution; the regulation of the hours of labor; the protection of childhood from the imposition of toil and their proper education in commodious, healthy buildings; cleanliness of streets and planting of shade trees in cities for protection from intense solar heat and the decomposing power by their leaves of deleterious gases and miasms; the establishment of public baths; the operations of quarantine to prevent invasion of pestilence and landing of immigrants with diseases dangerous to others; the isolation of persons attacked with infectious diseases and the disinfection of localities; the construction and management of general and special hospitals; the care of the sick poor in their homes; the prevention of consanguineous marriages and of those who have destructive types of constitution; the warning of society of the evil consequences of abuses of the brain, the material basis of consciousness, whereby a free will is impaired, and the sufferers become irresponsible and often mentally ruined; the registration of vital statistics; and lastly, the repression of those two giant evils of civilization—intemperance and prostitution.

We affirm that all the measures for public relief on these important subjects should be under the guidance of medical men.

It is not the mere knowledge of the human frame as a diseased entity or a mechanism that should give us highest consideration in the State, but rather our capacity to prevent sickness by securing the proper administration of the laws of health. The medical profession holds itself ready, as it has always, not only to diminish the destruction of life now going on, but ultimately to destroy the contagions that cause it. It is now becoming generally known that infectious diseases and toxic elements are disseminated in food. An infectious disease in the family of a dairyman, or amongst his cattle, may be as widely diffused as his distribution of milk. The pollution of streams of water and wells in towns, villages and homes of farmers, we know definitely, subjects many families to tedious and fatal diseases which a wise sanitation will overcome, if we possessed the power so to enforce it It is now so absolutely demonstrated that by the rigid application of hygienic measures the ravages of pestilence may be arrested that medical scientists speak of this destruction as a "self-imposed curse of dying in the prime of life."

Your petitioners are aware that Congress cannot enact laws on subjects which appertain to State and municipal legislation; but Congress can establish a Department of Public Health, which would assist, immensely, the systemization of facts of great importance to physicians and the people.

The latest addition to the Cabinet of the President is that of Secretary of Agriculture, and already a great impulse has been inaugurated by the practical farmer who is at the head.

The question may arise with some persons, whether such a department would subserve the interests of any particular school? We respectfully reply that amid all the apparent disparity in medical practice there is one true, severe unity, and to attain this all true physicians are continually striving. There is no disputation in medical science about anatomy, physiology, pathology, chemistry, physics, or preventive medicine; the difference amongst doctors lies in therapeutics or the treatment of disease; and as in the past, so for all the future practitioners will use a variety of remedies and in varying quantities, and there will be different modes of management of sick or injured people. With the advance in the way of education the differences in treatment will gradually become more unified.

The organism which is called medicine, like every other product of man's constructive genius, is striving to attain perfection, and to accomplish this it must be sustained in all its scientific undertakings by the co-operation of national and State legislation and the hearty co-operation of the people for whose health and happiness all its efforts are put forth to prevent disease. It is certainly a remarkable spectacle to observe its constant effort to save the people from disease, when success will limit to the smallest dimension the office of physician. But this grows out of the nature of their studies, the tendency of which gives the highest motive of unselfish service to suffering humanity. The physician is bound to render this service to rich and poor alike. The amount of gratuitous service, especially in great cities, constitutes one-third of their practice. The most distinguished and experienced of the profession form the staffs of all our hospitals, without any remuneration. It may be said that they receive their pay by reason of the distinction of their position; but they must have had distinction before their appointments. In war the surgeon must follow through the thickest of the fire, not to deal out destruction, but to stanch the wounds of friend and foe alike. If there was cruelty to prisoners on either side in our civil war, it was not perpetrated by the surgeons of opposing armies; and when the strife ceased they were the first to extend the fraternal hand across the field of conflict.

The collection of statistics of births, deaths and marriages, and their tabulation, we beg to say, should earnestly engage the attention of Congress. The different States and cities of the Union have for a long time been aiming to accomplish this, but we have no statistics that are national in character. The limits of the memorial do not allow us to show at large how, by such facts, many of the most important problems in our social state may be solved.

Recently an eminent medical writer of England, Sir James Crichton-Browne, M.D., LL.D., has shown that since 1859, while the decline in the death-rate at all ages has been 17.6 per cent. under fifty-five years, it has only been 2.7 per cent. at all ages above fifty-five. The principal decline has taken place under thirty-five. After forty-five the decline, since 1859, has been insignificant, but from sixty-five to seventy-five the death-rate in the same time has increased. He adds that it is not satisfactory to learn that while there has been an enormous increase in babies and young men and women, the loss is alarming amongst those eminent in experience and judgment. The causes of the vital failure in the mature element in society were not difficult to find by his statistical studies. In three of four groups of diseases most wonderful increase in mortality has taken place. Thus, in England and Wales, cancer, in five years, 1859 to 1863, carried off 35,654 persons; while in five years, 1884 to 1889, 81,620 died of that fell disease, an increase of 130 per cent. Seven-eighths of these victims were over thirty-five years of age. Of nervous diseases in the first quinquennium, 196,906 died; in the second, 260,558, an increase of 32 per cent. Of kidney diseases the loss in the first period was 23,176; in the second, 61,371, an increase of 164 per cent. Of heart disease in the first period, 92,181 died; in the second period, 224,102 perished, an increase of 143 per cent.

These diseases, he says, are of the degenerative character, and may largely be traced to vital abuses or overstrain, or increasing luxuriousness in our advancing civilization, thus establishing, broadly, a premature senility; moreover, the increase in insanity from the mildest to the gravest forms is causing solicitude everywhere. It cannot be questioned that this fearful increase in bodily and mental decay should be well understood and placed before the people; but it is painful to say that no such generalizations are attainable in our Government offices for lack of statistical records.

There is another aspect of this premature decay of grave interest, and it concerns a burning question of our day. Sir James shows that owing to the strain and drive in many manufactories where handicraft—piece-work—prevails, the neuro-muscular system of the shoulder, arm and hand, which on the average attains maturity at thirty years and should continue thirty years longer, begins to fail at forty-five; and while at thirty a man can earn 45 shillings a week, at forty-five, strive as he may, he cannot earn over 38 shillings, and at fifty-five his earnings fall to 24 shillings a week, owing to premature decay from overwork. In Sheffield he found that the makers of penknives, aged thirty years, who, in order to make a comfortable living, must strike 28,000 blows a day with a hammer, at forty years find their celerity and skill so much at fault from this continuous overstrain that their wages decline to nearly one-half.

Physicians are held to be the guardians of the organs that concur for the maintenance of the body; but it is not so generally understood that the great brain is just as much an organ of their conservative regard—it is not so well understood that a healthy brain is necessary to free will. This is a momentous question, and it concerns the happiness and prosperity of the social and political state. The injury which pupils suffer, more especially in the primary and intermediate grades of public schools, by the bad hygiene in overcrowded, ill-lighted and ill-ventilated rooms, has become so serious as to bring about State interference. In Germany medical supervision has been authorized in the construction of school buildings so as to overcome these evils. The sense of sight has been particularly impaired; but the organic life of the brain has been lowered by the same evils, and the intellectual processes affected. In the technological schools of France the use of tobacco by students is forbidden because it has been ascertained that this intoxicant deteriorated the higher mental faculties. Researches have been diligently made by medical specialists in our country, and gross evils in the hygienic conditions of schoolhouses ascertained, and the injury of general and special organs pointed out, and the American Medical Association has steadily promoted these investigations; but these reports have not seriously awakened the attention of city or State governments.

Another very serious evil exists in almost the whole range of our common and higher schools, that is, the so-called *memoriter* method of instruction, which seems to be a necessity so long as the rank in scholarship continues to be determined by *per cent.* of a pupil's correct answers in examinations. The abuse of memory fatigues the brain and lowers the power of the mind. Physicians protest against this method of teaching because it distresses the brain, impairs free thought and the constructive power of the intellect. Lessons are memorized and not acquired by efforts of the understanding, hence they are not well retained, and furnish a poor basis for wide intellectual culture. Not only this, but the emotional conditions so often encountered and the startling phenomena of hypnotism are in many cases superinduced by this cramming method.

There are no fortuitous conditions that concur for the production of the best moral and political circumstances of society; the whole is purposive intelligence existing in the individual and combined for the exigencies of the family and the State.

Wherever the highest development of physical health exists, there will be found the surest basis for development of the mental faculties. These are not abstract questions of philosophy, but are the most practical questions of our day.

A Secretary of Public Health would represent the medical consciousness of the nation, and become one to whom we could look for the exploitation of measures that will direct continuous scientific and collective investigation in regard to endemic, contagious and other diseases; the enlightenment of the people in sanitary ways of living; the dissemination of information respecting the most favorable places of residence for those afflicted with such chronic diseases as asthma, rheumatism, neuralgia and consumption; the examination of food and drinks; medicinal springs; the collection and tabulation of vital statistics at large and in various localities, such as the congested areas of our great cities and among various races. He would be able to co-operate with State Boards of Health, the Signal Service, the medical departments of the Army, Navy and Marine Service, unify and utilize their work, and thus make the Department of Public Health the repository of the most important facts that concern the comfort of the people; and his duties will grow broader and stronger in adaptability to public needs. Moreover, the creation of this department will be a declaration by Congress that the promotion of the health of the people is a supreme law, and that in the future progress of civilization medicine shall have its true rank with the other offices of the State.

All of which is respectfully submitted.

C. G. Comegys, *Chairman.*

[It is earnestly requested that all who favor this move will write to their Senators and Representatives, stating their anxiety to see this new position created.—*Editor.*]

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COMMUNICATIONS.

The Economic Value of Sanitation.*

BY P. H. BRYCE, M.A., M.D.,
Secretary of Provincial Board of Health of Ontario, Toronto.

GENTLEMEN: To an audience such as this it will not be necessary for me to define at any length the word *sanitation;* but I may say, in brief, that I shall take it as meaning *the act of keeping or making whole, sound or healthy*, whether it be applied to the individual, the municipality, or the nation. But, indeed, as nations are merely divisions of a larger whole, I shall say, or of the people of the world; since we shall see that this work of sanitation has a truly continental, and even intercontinental meaning; and that the watchword the sanitarian may most properly adopt are the words of an American poet:

"No pent-up Utica confines our powers,
But a whole, vast continent is ours."

If, then, our definition be accepted, it ought not be difficult for every one in my audience to agree with me, that keeping healthy has a value—and, indeed, an economic value—of a very definite character.

Assuming, then, that my audience agrees with the premises, I trust I shall not find it difficult to carry them with me in the conclusions which I shall endeavor to draw therefrom.

The definition I have given of sanitation at once makes it evident that into whatsoever spheres man's life and activities enter, whether of being or doing, the degree or quality of his *soundness* or *wellness* must have an economic value, capable of being accurately measured or weighed in proportion as we have the exact length of the measuring-yard or the balances sufficiently well adjusted.

I propose, therefore, briefly to show where, in a few instances, economic losses and gains have occurred; and shall thereafter endeavor to indicate how sanitarians have in the past added and are still endeavoring to add to the credit side of the ledger.

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* The Annual Address before the State Board of Health of Pennsylvania, delivered at the Sanitary Convention held at Erie, Pa.

In the Centennial Discourse of the late lamented Dr. Henry Bowditch, of Boston, on Preventive Medicine, he refers to the First Epoch of Medicine in America—ending in 1832—as the so-called "Drug Epoch," wherein drugs were everything and Nature was forgotten.

From this period to 1868, when the First State Board of Health was established, he calls the Second Epoch, wherein has been seen the growth of a skepticism as to the value of drugs, and a profound reverence for Nature and a strong belief in her powers of limiting and curing disease.

Nowhere has the popular side of this belief been more neatly expressed than by the Honorable Thomas F. Bayard, late Secretary of State, in an address to the International Medical Congress, at Washington, in 1887, when he said, "Forgive me if, as one of the great army of patients, I humbly petition the profession that in your deliberations Nature may be allowed a hearing when remedies are proposed; that her *vis medicatrix* may not be omitted in computing the forces of cure, and that science may be restricted as often as possible to sounding the alarm for Nature to hasten, as she surely will, if permitted, to the defense of the point assailed."

In this period, although much more brief, positive legislative results were forthcoming, and in it may be set down, as in England, the inauguration of an epoch which Bowditch has called "that of observation," or "the accurate recording of facts, and subsequent analysis of them."

To this period we look back, as sanitarians, with reverence, as being that wherein *modern* sanitation was born. As early as 1828 the late Sir Edwin Chadwick had published an article in the *Westminster Review* on "Life Assurance."

He commenced, without any strong bias, an inquiry as to whether the surroundings or environments of individuals have an influence on their health and duration of life. His conclusions, which were opposed to those stated by the Government Actuary to a Parliamentary Committee, were that the expectancy of life in the middle classes of England, with improved social and moral conditions, had distinctly improved. And, as he has stated, from the train of reasoning thus developed grew what he called "The Sanitary Idea." Other articles followed on "Preventive Police" and "Public Charities."

After slumming in the East end of London, where he contracted typhus fever and all but succumbed to it, in 1832 he was appointed Secretary of a Royal Commission of Inquiry into the Poor Law System.

In 1838 a severe outbreak of fever in East London caused an inquiry to be held into its cause, and thus "the first sanitary commission was appointed, and its reports caused quite a sensation and a demand therefor, till 9,000 copies were distributed."

But another outcome of Chadwick's early labors was the institution, in 1838, of the registration of births, marriages and deaths in England—to the position of registrar of which the distinguished Dr. Farr was appointed.

I need not, gentlemen, further outline the rise of sanitation. Given the two elements of observation and registration, we have the factors necessary to the study of the economics of the science.

Said the late Dr. Parkes: "The attention now paid to the public health is in a large degree owing to the careful collection of births and deaths, and of the causes of death in England during the last fifty years."

We see, then, that in this so-called epoch of observation were supplied—notably in England—the elements necessary to the determination of the principal factors which enable us to draw fair conclusions regarding the value of sanitation to the State.

THE VALUE OF LIFE.

Reference has already been made to some studies carried on at the beginning of the "sanitary period" on the commercial value of life. This must be our starting point. All must agree that the individual life has a certain value to the State, simply from its power to produce wealth. The first estimations regarding the value of life were intended to enable the Government of England to fix the annual amount which ought to be paid as an annuity on a certain amount paid over to it; and that insurance companies might equitably estimate the amount of premium to be paid on a policy issued for a given amount. The result of extended inquiry into the lives of Government annuitants was that, during the century preceding 1830, the length of life had notably increased and especially in the years succeeding the Napoleonic wars.

Baron Delessert showed that in France in the

14th century 1 person died in every 17
17th " 1 " " " " 25
18th " 1 " " " " 30
1820–25 1 " " " " 39

The importance of this fact became at once manifest. It was seen that if a life was prolonged by 25 per cent., then the Government would by that amount be paying too much for an annuity. On the other hand, insurance companies were becoming enormously rich by basing rates on the supposition of the duration of life being, say, 25 per cent. shorter than it actually was.

We thus can see that a life must be considered as having an actual cash value to the State, whether viewed from its power to produce wealth, or by the capital which, made by the annuitant, is actually loaned to the State, for investment in some presumably profitable manner.

Manifestly, therefore, the saving of the lives of the population of a State is one of the most positive methods for the production of wealth—much better by far than the introduction of new populations by immigration, who, apart from their possibly lower physical, moral and mental status and foreign tongue, must be, for some years at the best, of small value, not being trained to the special customs and class of work of a new country.

Let me now present a few illustrations of how wealth in this sense has increased in England:

In 1650 England had a population of 5,500,000
" 1801 " " " " " 8,892,586
" 1878 " " " " " 25,000,000

and during this latter period she has also contributed many millions to the population of the United States. We have already seen that the duration of life was increasing, the Registrar-General's returns showing that

In 1849 in England, a cholera year, the death-rate was 25.1 per 1,000
1866 " " " " " " " " " 23.0 " "

From 1876 onward there has been an almost uninterrupted fall. In 1871–80 its mean was 21.27. In 1889 it was only 17.8

Says Dr. Farr, of the period between 1871–80, the reduced rate meant an annual saving of 20,000 lives; or, comparing the period of 1838 to 1854 with that of 1871–80, the rate in the latter added nearly two years to the life of every boy, as compared with that in the former; or 39.91 years increased to 41.35. Or, to put it in another way, taking the annual births between 1871–80 at 858,878, the difference between the two rates shows a gain for the whole children at the latter rate as compared with the former of 1,800,047 years.

What this saving of life means, is that every year of the latter period saved to England 20,000 people, or 200,000 in all, having a length of life of 40 years—thereby giving to the State all the wealth which each may produce during 40 years.

Quality of the Value of Life.—It must, from what has been said, appear evident to every one, that whatever has improved the conditions whereby life is prolonged, has served the economic purpose of increasing the population of a country. But some might object that it does not follow that wealth has increased simply because population has—remembering that $50 of pure silver dollars would equal $100 in silver if 50 per cent. were base alloy.

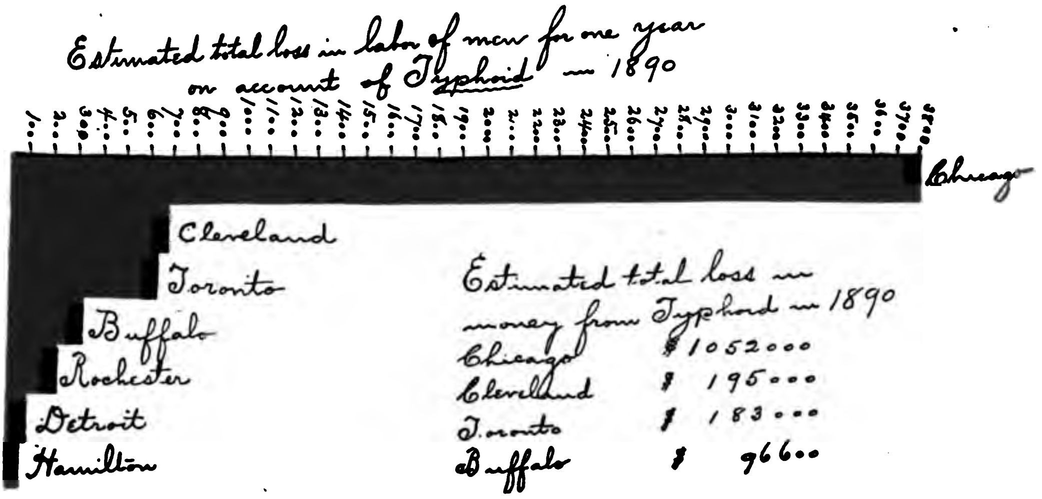
I shall endeavor, however, to show, further, that the quality of the value of life is actually proportionately increased by sanitation.

This is seen in several ways; thus

(*a*) Assuming, as is the case, that about 1 in every 15 of the English population is an artisan, and that he has two years added to his life, then as skill increases with experience we may say the producing value of 2,000,000 and more of English artisans for 2 years is added to the wealth of the country.

(*b*) By the relatively higher continued healthfulness of the man, who is to live two years longer than under other conditions. This is a fact beyond dispute. It has not infrequently been stated in a superficial way that by reducing the mortality we maintain alive a population of weaklings. But the statement is most misleading. If it be true that if by purifying the air of a city or a single workshop, wherein are 100,000 people or 100 employees, we are able to keep the infants and children from dying at the rate of 1 to 4 in the first year, or 50 per cent. of all under 5 years of life, it is equally true that in the other we have enabled, say, 100 work-girls to maintain a higher average of health, and while the weak might in a vitiated air have become unfitted for work, the strong would proportionately have had their average health reduced. Or, to put the matter in another way, suppose 10, 9, 8, 7, 6, 5 be taken as degrees of resistance to disease, and that all below 5 are doomed to die before reaching 21 years, then it is plain that any influence by which the resistance to disease is lessened does by so much tend to depress the first five proportionately, the rest below the line which to the onlooker is called the health line. Indeed, as has been well said, "The whole object of sanitary legislation is to so increase the resistive power as to incase the body in that which shall be proof against an attack." This is on the positive side; but on the negative it may be said yet more truly "that the object is to remove those influences or conditions which may be called the attacking forces."

Sir Spencer Wells, before the Sanitary Institute of Great Britain, as President, in 1886, said: "Assuming that in fifty years 200,000 of a population had been saved by sanitation and medical work, then their economical value was at least £300,000,000, and that a clear gain." Formerly it was calculated that one in twenty-three of the population was constantly sick, and the products of all their labor necessarily withdrawn. A great deal of this sickness has been altogether prevented, and the duration of that which comes in spite of sanitation is lessened.



Estimated total loss in money from Typhoid — 1890

Chicago	$1052000
Clevelland	$ 195000
Toronto	$ 183000
Buffalo	$ 96600

But having set forth the economic value of sanitation, so far as it saves lives to the State, I shall now illustrate its bearing upon the prosperity of some of our lakeside cities, before adverting to some of the more modern of our sanitary or life-saving appliances.

To this end I have had prepared three diagrams, which show what the death-rate was in the several cities during the year 1890, for the two contagious diseases which cause the major proportion of deaths—typhoid and diphtheria. As will be seen from their relative prevalence in different cities, they stand in two very distinct categories as regards causation. While both are filth diseases, and hence are both capable of being propagated in town filth and sewage, yet diphtheria does not seem capable of causing extended epidemics through polluted water supplies; while, on the other hand, typhoid is now known to cause town epidemics principally through this medium. They also have two other distinctive differences: viz., first that typhoid attacks especially persons of fifteen and over, while diphtheria is comparatively infrequent among adolescents and adults; and second, that while typhoid is but slightly disseminated by direct contact, with ordinary care, diphtheria is intensely infectious to the young, who are peculiarly susceptible to it.

The diagrams referred to illustrate this in a remarkable manner. Take Chicago and Detroit for instance: In Chicago the death-rate from both is high. while in Detroit typhoid is remarkably low and diphtheria is enormously high; the disproportion here seen to be so great exists to some extent in the other cities, while the special conditions to which I shall allude exist to a greater or less extent.

By reference to the diagram for typhoid it will be seen that it is high in Chicago, Cleveland and Toronto. All of these cities get their water-supply from the great lakes, as do the others; but mark the difference: In each of these the city's sewage is poured into the bay or lake in front of the city; whereas Detroit, Buffalo and Brockville pour their sewage into the great rivers flowing past them at the rate of several miles an hour, making the least contamination of their drinking-water impossible. In the case of Hamilton, while the sewage is poured into the bay, it is wholly land-locked, and the water is pumped from the lake, outside the bar. Curiously enough Windsor, a town of 10,000 inhabitants, has a death-rate from typhoid appoaching the average of Chicago and Toronto, though it is opposite Detroit; but the difference is due to the fact that Walkerville sewage passes into the river a few hundred yards above the Windsor intake pipe.

What is here stated will, I believe, prove to be a *law of pollution*, viz.: *that taking a series of years, the pollution of even relatively immense bodies of lake water, which, having no regular flow, are liable to carry sewage to a water intake*, will, at certain seasons and with winds moving sewage toward the point of supply, cause outbreaks of typhoid, more or less epidemic.* I further believe that wecan establish from these diagrams another law, viz.: "*That in cities obtaining practically all their drinking water from a public supply, whose source is beyond the possibility of contamination, typhoid fever will practically disappear from the list of causes of mortality.*"

As regards diphtheria, from what I have said, it will be gathered that I take it to be a fact that its prevalence depends directly, in towns where public water is in general use, upon direct contagion; in other words, in those towns *where municipal regulations are defective, either in scope or in their enforcement, or in both.* It thus becomes apparent that sanitation in the matter of these two diseases possesses two largely distinctive elements: one of which belongs peculiarly to the Department of Works, the other to the Department of the Officer of Health.

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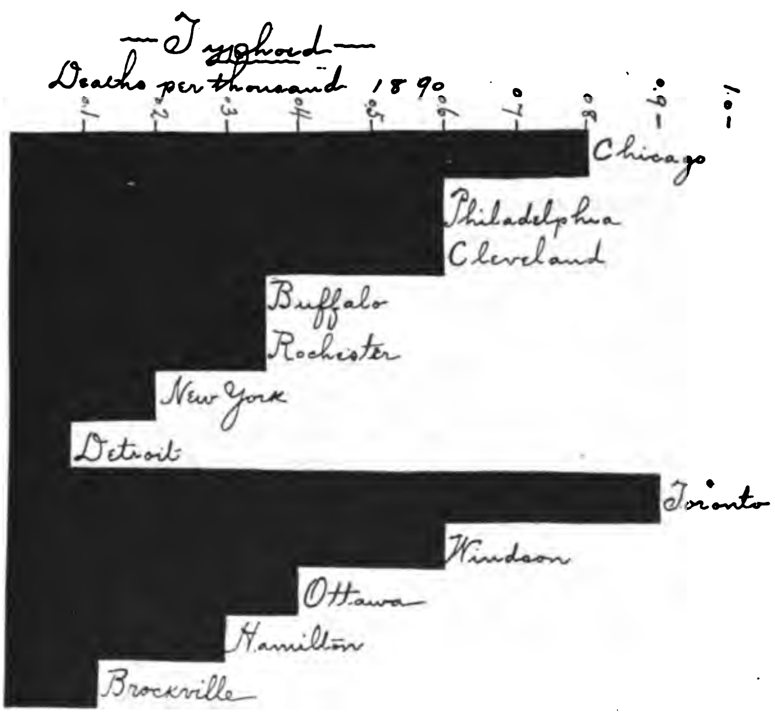
* Thus a weekly analysis of Chicago water showed that with a southwest wind, continuing for a week, the albuminoid ammonia of the water rose from .065, gradually but constantly, to .120 per million parts. This wind moves sewage from the sewer outfalls toward the water intake pipe.

I have made this digression in order to explain what the first diagram apparently teaches; and now I shall return to the economic aspect which this diagram presents. You will see it in a moment in the second and third diagrams.

It will be seen that I have assumed that for each death from typhoid there are nineteen who do not die, at any rate, from this disease; although, as is too often the case, it supplies conditions by which the seeds of consumption obtain an entrance to the system and produce, sooner or later, their fatal effects as a sequela.



I have also assumed that each case of typhoid means the loss of a month to the patient and one month to the nurse; but have said nothing about the actual expenses of the sickness in physician's bills, medicines and undertaker's fees, all of which would be proper items in the loss of productive capital.

Taking, then, the figures as we find them, and with these approximately correct assumptions, we obtain the following for Chicago:

Cases .8 per 1,000 by 60 days for nurse and patient equals 960 days per 1,000.
And 960 days by 1,200 equals 1,152,000 days.
This divided by 300 working days equals 3,840 years, or the loss of the year's work of 3,840 men.

At one dollar a day this means the loss of $1,052,000 to Chicago for one year of sickness from typhoid alone. This rate would mean for Detroit a loss of $210,400. Whereas Detroit actually did lose only $24,000. On the other hand, if the Detroit rate were attained by Chicago $800,000 would be saved—a sum which would pay the interest, at 3 per cent., on over $26,000,000 of capital to invest in new water-works.

Without discussing the losses from typhoid further, I turn to the deaths from that other disease *par excellence* of this northern temperate region, viz., diphtheria.

I have had a chart arranged to show its prevalence as well. It must undoubtedly be considered the pest of our climate. Its microbe may multiply outside of the body, like that of typhoid, but has in addition an extreme capacity for spreading by infection. From the Tables I therefore draw the following conclusions, viz:

(1) In a city or town with an average attention to sanitation, we have a more or less constant presence of so-called sporadic cases, amounting perhaps in deaths to 3 or 6 per 1,000.

(2) Under, however, peculiar seasonal atmospheric conditions (such as a prolonged dry, warm autumn) the germs of the disease seem to freely develop in organic filth; hence an extension of the sporadic cases takes place; but mark the difference with typhoid.

(3) Each case of these becomes a new center, each house wherein a case occurs being liable to become a distributing point. Persons, and especially children going to school, spread it broadcast, unless the strictest municipal supervision is exercised over these cases and the public school.

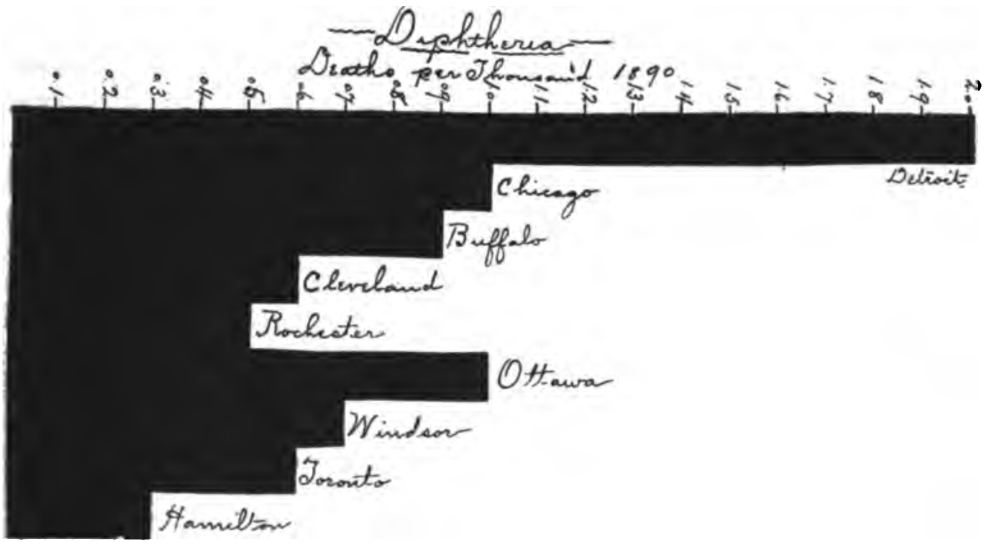
(4) That since the direct infection is enormously more common than in the sporadic cases, we have in this fact the evidence that the deaths from the disease are in a large degree preventable, and hence form a most important factor in this question of the economics of sanitation.

Since 1880 this disease has undoubtedly had in the country, as a whole, a greater general prevalence than before, though its mortality in several years past has undoubtedly been lessening, as compared with the cases occurring. This is but natural, if we remember that its spores are vegetable and hence spread, just as the spores of the black knot fungus have spread among the fruit trees. With regard to the latter, we are aware that what is necessary to limit it is to remove at once a limb affected and burn the knot. We do not, however, imagine that the spores are all destroyed; but only those which we have detected on the knot.

It is quite clear then that with diphtheria the imperative question in its limitation is isolation or removal of the infection in cases. This may, in large degree, be done by municipal regulations, intelligently and perseveringly administered. That this is done much more thoroughly in one city than another, we are very well aware. Taking Detroit as an example: here it appears that a single city had almost as many deaths in 1890 as had the whole Province of Ontario. Look across the river. We must remember that Windsor is the nearest suburb to the business portion of Detroit and that there is a constant intercourse between the two cities. In spite of infection, therefore, being frequently brought to Windsor, the disease has been limited there by the active interference of one of the best officers in Canada, supported by most thorough regulations.

Compare Detroit with Hamilton, where the latter city has been under a most vigilant officer for ten years. There diphtheria has so steadily declined as to cause but a small percentage of deaths.

Observe what the losses mean. It may be taken as a fair average that one death occurs in every five cases of diphtheria. At least one nurse's services are constantly required for, say, an average of a fortnight. From these data it thus becomes easy to calculate, as in the case of typhoid, what the loss means. The rate of deaths is:



Typhoid, 5; 8 Diphtheria.

But we have assumed in the case of the first, twenty cases to one death, and with the latter five cases to one death. Hence the ratio of cases is:

Typhoid, 20; 8 Diphtheria.

And if we assume that the loss in the latter is only one-third of the former in time, we can add, what is probably below the real figure, about one-twelfth of the loss from diphtheria to the total average loss from typhoid for all the cities in the list.

Further comment seems needless. It surely is not necessary to add to all this the economic loss from doctors' bills, drug expenses and undertakers' charges, in order to show the extent to which these cities lose annually from imperfect sanitary methods.

We now must advert briefly to some of the methods which modern sanitary science has developed, and is still more rapidly improving, for overcoming the evils of defective sanitation.

Some of the important methods have already or will be set forth in the splendid list of papers set down for discussion at the Convention. I, therefore, need do but little more than refer to them. I shall do so in the following order:

First of all to be considered is *the house we live in*. Here we have to examine what is under the house, what is about the house, and what is within the house. As regards what is under the house, there are two principal things to be inquired into. With the presence of organic filth, which is *made-up soil*, from old refuse heaps, or filth from vegetables, etc., in the cellars, with moist walls, a house can hardly be made healthy. Cellars certainly can and must be kept clean and sweet. Lime-wash is a great cleanser, while concrete floors, etc., may help the first defect.

Boards decaying from damp in floors are most dangerous, and hence cellars must be drained. But this does not mean that we must let the water come in and then drain it off. Such cellars are always damp, the ground outside must be deeply drained, and to this end field tiles should be laid around the house and connected with field tiles laid in the same trenches with the sewers.

As regards what is around the house, we have especially to remove all organic filth from house slops and yard refuse, to remove heaps and all garbage of lanes and alleys. Hence a systematic sanitary inspection of yards and lanes is a necessity, associated with a frequent and thorough scavenging department. Gradually all yards and lanes should be paved with cobblestones, or bricks, or other rock material.

As regards what is within the house, cleanliness, or freedom from organic filth must be our watchword. Closets and dark spaces must be tabooed. The fewer carpets and woolen hangings the better, and weekly cleanings are infinitely better than the old half-yearly attacks made upon the stored-up filth. These remarks must apply with the same and even greater force to the schoolroom, where, daily, forty or fifty children sit for hours, and are constantly inhaling the dust tracked in on boots and shaken from clothing; this, in the house and school, often is the dust of disease. The germs found in the air of rooms are found to be a thousand times more numerous than those in the outer air, even of a town, unless on a windy day.

In the sunshine, with oxygen, they are gradually destroyed, but being borne into the house they collect there, and if stirred up only settle again on the persons and into the lungs of the house-dweller. Among these, from time to time, are borne the germs of infectious disease, either from the outer air, but much more frequently with the boots, clothing and breath of persons from other infected houses or schools, or who have been suffering from disease itself. Thus we know from experience that in the winter months, when houses are closely shut up, these diseases become most prevalent. It thus becomes apparent that municipal control of houses, where infectious disease exists, should be of the most positive character. If the infection is in such a house, it must, for the sake of present and future inmates, be removed at whatever cost. But as we know this is most difficult, it is reasonable that we should allow as few infected houses as possible. Hence it is very much better to have all cases of these diseases removed to isolation houses, hospitals, etc., where they are usually better treated and where infection can be readily destroyed.

But another most dangerous inmate of the house is sewer air. I venture to say that our experience in Toronto is not peculiar to that city alone; and there it is found that not one system of plumbing in twenty will stand the forcing of smoke under pressure into the pipes where defective joints and pipes abound.

Thus drain and plumbing inspection, after the most approved modern fashion, is necessary in all houses already built, and is very easy of accomplishment in every house being constructed.

The fewer plumbing fixtures introduced into a house, the safer does such house remain. But this house plumbing has its exit into public drains and sewers. These in old towns are commonly most defective. They breathe sewer air at our feet, and, if obstructed, dam back sewage into our houses. Good sewers become a necessity where public water supplies are found, and public water ought to be in every town. There is no village, town or city of many years' growth, where houses are at all aggregated, where wells can be considered a safe source of drinking-water. While in most instances public waters are to be preferred to wells, the general distribution of a single water-supply makes it of extreme importance that the supply should be free from pollution; for if a public supply be polluted, then disease spreads over a city like a pall.

In Ottawa, in 1887, when the public water-supply was led in a wooden pipe about half a mile from that mighty river, a quarter of a mile wide, with no towns above, 1500 cases of fever appeared within six weeks. It was subsequently found that this pure water was, in the short distance of a quarter of a mile, polluted by several private sewers, which ran into the aqueduct or canal in which the wooden pipe was laid, and which had been constructed to obtain water-power to drain the pumps.

An iron pipe, afterwards laid elsewhere, removed the danger. Need I do more than refer you on this point to the several lakeside cities in our diagrams? Such, in a few sentences, are the principal matters requiring our immediate attention. Such questions as our food supplies—notably our dairy supplies—produced on premises proverbially filthy, cannot receive too much attention. Workshops, factories, etc., have all their special difficulties and dangers, and demand constant and intelligent attention on the part of those having them in charge.

Many other matters require remark, but our time forbids. There is one other point of sanitation which, however, we cannot overlook, and it is this: If a close study be made of the records of our prisons and asylums, we find there that what may be called moral sanitation is in need of greatly increased attention.

England, as we have seen, has a wonderfully developed system of sanitation, and yet she has 18,000 prisoners, 10,000 in penal servitude and 90,000 imprisoned annually on summary convictions.

Several years ago the annual expenditure in the United States for intoxicating liquors was nearly $900,000,000. All are aware how closely allied is the list of the criminal, the insane, and the inebriate to the cost just given. It thus becomes apparent that from an economic standpoint these conditions create an enormous loss. The moral are taxed to support others, who, through disease, imprisonment, poverty, etc., are non-producers—there being thus a double economic loss. It is thus manifest that, as in ordinary sanitation, the interests of the clean are inseparable from those of the unclean.

As has been well said by Sir W. H. Michael, Q.C., an English economist, "It is impossible for us to protect ourselves without caring for the less-favored of the community. Their crimes and their ignorance are their own. Their health is of us, their condition reacts upon us, and in caring for them—in attempting to guard ourselves from injury—we protect first their interests, that we may be protected, and in helping to provide them with the requisites of public health—food, shelter and clothing—we provide the very first requirements of self-preservation."

Difficulties to Overcome.*

BY S. S. JONES, ESQ.,

Editor Carbondale Leader, Secretary Board of Health of Carbondale, Pa.

EVER since the fateful morning that witnessed the forced and presumably hasty exit of our first parents from the delightful garden—their first home—man has had no lack of tangible ills to worry over. Immediately following his eviction he was ordered to maintain himself by his own exertion, forced to toil and perspire, with no immediate reward except, perhaps, the hunger-sauce that makes humble-pie palatable. Man's difficulties are supposed to have commenced with the knowledge that he was for the remainder of his life to shift for himself, and they have continued to come in one form or another ever since. These everyday trials have served to develop every peculiar phase of human character, yet all the inhabitants of the world may be grouped in three classes, viz: First, those indifferent mortals who avoid difficulties for the reason that work is extremely distasteful to them; and any condition that insures freedom from toil and the payment of municipal taxes usually satisfies this ambitionless class.

Second, the chronic grumblers—the men who are so blind to their best interests that they never see anything but difficulties, yet in some inconceivable way they are possessed with the idea that they have inherited all there is of value in the whole world. Among this class of dissatisfied mortals may be found men and women who surround themselves with every luxury that money will procure, but invariably refuse to join in a movement by which their less fortunate fellow-men may share, in some degree, what purely selfish men enjoy. This class furnishes the obstructionists and so-called high kickers, who are always ready to oppose every movement in which the masses have a reasonable right to be interested.

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* Read before The State Sanitary Convention at Erie.

Third comes the broad-guaged, public-spirited, progressive man, who believes that it is man's first duty to take care of himself and his neighbor at the same time. These men court difficulty, laugh at the obstacles set up by chronic fault-finders, fill with enthusiasm the indolent, shiftless drones who burden every community, convincing the doubting ones that difficulties are but angels in disguise, with whom a wrestling match would prove advantageous and secure to the victor temporal blessings innumerable. It is in this division of the human family that the active reformers are to be found—men who have no time to celebrate a dead past, but who have time and tireless energy to devote to a living present.

Among the various agencies now at work in this and other lands, having for their object "making life worth living," none deserve from the people, and from all the people, such hearty co-operation and practical assistance as the organizations working under the direction of the State Board of Health; but men who engage in this line of reform work soon learn that the people in many localities refuse to take kindly to the rules, and are far more ready to hinder than help in a matter of such vital importance to the public.

There is reason to believe that sanitary reforms, wherever attempted, are always attended with serious difficulty; and the size of the obstacles that obstructionists place in the way of the reforms are usually proportionate to the work undertaken.

It has been the experience of at least one Board of Health in this Commonwealth, that sanitary regulation demands of the men engaged in it a vast amount of hard labor and exercise of every virtue enumerated in the code.

It is all well enough in theory to talk about men who have the courage of their convictions, who are willing to sacrifice personal popularity, business prospects, everything but the hope eternal, in order to insure the success of sanitary reform; but the fact is that there are few localities on this sphere that can furnish enough of that particular kind of timber necessary to stiffen the spinal column of the majority when the local Board of Health finds that conditions exist which demand that sanitary laws be enforced regardless of the high character, political power or social standing of the men who neglect or refuse to comply with the results.

In communities where the surface signs indicate indifference to the ordinary comforts of life, a low order of civilization is generally found. The exterior marks are a pretty safe guide in talking up the special requirements of the community when the subject is discussed at a meeting of the local board, or at a convention called to discuss sanitary questions; but the difficult work begins with the first attempt to put in practice the reform-work suggested, to inaugurate the changes proposed. At first the movement may not meet with very decided opposition, but it likewise receives little encouragement, and when it is found that all classes come under the law, the new departure becomes decidedly unpopular.

One of the strange freaks in human nature is discovered only when uniformity in sanitary observations are sought after; when an inspection reveals to the self-satisfied householder that his premises require quite as thorough work as does the home of his neighbor of whom he has complained. Every locality has its quota of "very clean residents," who are loudly in favor of the general cleaning until they find themselves included in the number who must comply with the rules. The notice to "clean up" is a positive crusher to such people, for they imagine that they are better judges of sanitary requirements than the members of the Board of Health, and, once aroused, these very nice people frequently become the pronounced enemies and bitter opponents of systematic sanitary reform. Plain, unvarnished truth is good medicine for one's neighbors, but for the neighbors only.

The people as a rule have much to do in the way of creating sentiment for or against every reform movement, it is only the mob who declare all sanitary law contary to public policy. The great mass of people, however, are peculiarly unfortunate inasmuch as they are either unable or unwilling to see and admit the advantages of thorough and systematic sanitary regulation. They object to the restrictions and condemn the departure as an innovation that interferes with th rights as citizens of a free country. Such is in substance the foolish claim of many otherwise intelligent people, and nothing short of practical demonstration by enforcing the laws will convince this class of citizens that they hold erroneous views of sanitary work. The opposition of the masses is of course the chief obstacle that reformers meet with, and the conservative men engaged in sanitary reforms argue that the prejudice can only be overcome by educating the obstructionists until their eyes are opened and public sentiment drifts over to the side of right and practical reform.

Creating sentiment in favor of sanitary regulation is decidedly slow work in communities where an element that will not be convinced holds the reins of government, where many of the public offices are occupied by men who are too stupid to comprehend the wisdom of sanitary measures and too cunningly politic to permit the existence of a department of the public service that they cannot completely control. The opposition to the maintenance of the Board of Health in this city was confined to the minority party in Councils when the department was first created, but the opposition has grown during the year and a half of the board's existence, and this is due entirely to the activity of the members of the board and their effort to administer the laws as they believe it to be their sworn duty. They do not discriminate in enforcing the rules, and men in authority are not, in their opinion, entitled to privileges that the common people are denied. Among the first to refuse to comply with the rules was a member of the upper branch of Council, one of the largest owners of realty in the city, and when he learned that the sanitary department was no respecter of persons, he tried to get even by cutting down the item of the Health Department in the general appropriation ordinance, and just at present he is likely to succeed in his scheme. This is one of the difficulties that is, perhaps, confined to this city.

In several instances where it has become necessary to commence proceedings at law against persons who violate the local ordinances, the local courts decline to give the Board the support it is entitled to. One of our Aldermen recently ruled that connecting a wash-bowl drain-pipe with the public sewer was fully complying with the notice to connect the premises with the pipe line, allowing the closet drainage to continue to empty into a vault which he had been directed to abandon. In a number of instances where clear cases for conviction were brought, the court refused to impose the fines and discharged the parties arrested. But this order of difficulties is being overcome gradually.

Physicians, too, are given to helping the kickers occasionally in order to please their patrons, and contagious disease cases are not reported promptly; but the doctors are easily managed when they learn that the law has been violated and that the Board means business.

Now, these are simple instances of the difficulties that are met and overcome, and shows, too, how little consideration is shown the Board of Health in one city of this great Commonwealth by the local authorities and the people with whom the members of the Board come in contact. The same difficulties doubtless confront other boards, but these of which we know we have described. The time will come when trifling obstacles will vanish and difficulties will no longer stand in the way of perfect sanitary regulation.

This happy condition may be expected very soon after the people, feeling the need of perfect drainage and cleaner surroundings, will come together and by concerted action secure for themselves what the members of the sanitary organizations have for years been trying to provide.

Compulsory Domiciliary Quarantine against Diphtheria.*

BY J. H. MONTGOMERY, M.D.,
Of Erie.

DURING the early part of February of the present year considerable space in the daily papers of the larger cities was devoted to the discussion of the recent appearance of typhus fever at one of the large seaports, and the probability of the disease spreading.

Typhus fever had just appeared in New York, attacking a number of newly arrived immigrants, mostly Russians, who made the trip in a densely crowded steamer. It was afterward learned that many of these people had spent some time in lodging-houses containing typhus-fever patients, previous to embarking for America.

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* Read before the State Sanitary Convention at Erie, Pa.

With the first outbreak of the disease, the New York Board of Health at once took active measures to prevent the disease spreading. All the immigrants were traced as far as was possible, and as many as possible were placed under quarantine, until the usual period of danger was passed, and all cases of the disease removed to the hospital for contagious diseases. All premises occupied by typhus-fever patients were thoroughly and carefully fumigated by the officials of the New York Health Department, and every vessel arriving from a port where typhus fever was prevailing, was quarantined and fumigated before being permitted to approach the city and land her cargo.

Owing to the strict measures employed, there have been but few cases outside these immigrants. The additional cases have occurred among those exposed to the disease in patients in the hospital for contagious diseases, so that practically the epidemic was limited in extent and confined to a small area, viz., the island in New York Bay, whither all the typhus cases have been removed and where they now are. Up to March 18 there had been 155 cases, with 26 deaths, a mortality of about 16.8 per cent.

Typhus fever is a disease requiring considerable exposure before contracting it. The crowding together of those sick with the disease seems to intensify the poison and to render its transmisson more likely. It is directly contagious, and is transmissible by the atmosphere, though, as abundant evidence goes to show, only to a limited extent, perhaps only a few feet. It is probable that the poison can be conveyed by clothing worn by patients suffering from the disease. At any rate, it is not the most contagious of the contagious diseases.

The mortality of typhus fever is variously stated to be from 10 per cent. to 18 per cent. Murchison states that, after excluding deaths resulting from sequelæ, the mortality is about 10 per cent. Among children the death-rate is remarkably small.

Collie of London gives the following:

London Fever Hospital, up to age of 14, 1.78 per cent. (Ency. Dis. Child., vol. 1, p. 501).

Eastern Hospital (Fever), up to age of 14, 1.76 per cent.

Southwestern Hospital (Fever), 3.84 per cent.

For purposes of comparison let us look at the percentage of deaths occurring among the other severe contagious diseases:

Yellow fever, 50 per cent. (Bemiss, New Orleans, Pep. Sys. Med., vol. 1).

Yellow fever, 29 per cent. (Guiteras, Charleston, Ency. Dis. Child., vol. 1).

Yellow fever, children, 10 per cent. (Guiteras, Charleston, Ency. Dis. Child., vol. 1).

Smallpox, 15 to 50 per cent. (Hyde, Pep. Sys. Med., vol. 1).

Cholera, 50 per cent. (Stillé, Pep. Sys. Med., vol. 1).

The mortality of children from smallpox and cholera I cannot find expressed in figures. It is stated to be very high in smallpox, decreasing with the age of the patient. The above figures are only an average, and will be found to vary in different epidemics.

The disease first spoken of, typhus fever, was vigorously combated at the beginning of the recent outbreak in New York, and with success, so far as preventing its spreading either over a large area or among people beyond those necessarily exposed to the disease.

Were a case of smallpox, yellow fever, cholera or typhus fever to appear in any city or town, the proper authorities would at once remove the patient to a hospital for contagious diseases, or, in the absence of such a building, would isolate and quarantine the dwelling entertaining such a case. All persons exposed to the disease would be quarantined until the usual period of incubation was past, and, after the recovery, the premises occupied by a patient would be thoroughly and completely disinfected and fumigated by the best-known means before it would be again occupied. The consent or wishes of the patient or landlord would not be asked. Very little opposition would be offered ; in fact, assistance rather than opposition would be offered to render the abode free from the risk of contracting a dangerous disease. Were such precautions not taken by our sanitary and health officials, severe censure from the press and public would follow the neglect of those in authority to prevent the spread of the disease.

Since September, 1891, our city has been visited by an epidemic of diphtheria, there having been from September 21 till March 25—according to the records of the Health Department—261 cases, with a total of 105 deaths from the disease, giving a mortality of 40 per cent. This is larger than the mortality of typhus fever, which, in the present epidemic, was 16.8 per cent., and, as a rule, is not over 18 or 20 per cent.—about equal to the average mortality of smallpox, though probably less than it would be in smallpox patients of the same age—greater than that of yellow fever for the corresponding age, and about equal to that of cholera. It should be borne in mind that this mortality of 40 per cent. was only for this particular epidemic. In some epidemics it would doubtless be less, in others greater. Jacobi, of New York, is authority for the statement that in some epidemics it reaches 95 per cent. (Pep. Syst., vol. 1, p. 692). If this be true, we know of no disease that may be attended with greater fatality than diphtheria. All the diseases against which such strict sanitary measures are directed to prevent their extension—viz., smallpox, yellow fever, cholera and typhus—are infectious, communicable and contagious. The poison can be transmitted by the atmosphere, is capable of clinging to inanimate objects for an indefinite length of time, and then, under suitable conditions, developing again.

In comparison with the characteristics of these dread diseases, let us see what diphtheria has in common with them. Jacobi states: "Hardly any disease clings so tenaciously to solid and semi-solid bodies, and, in this way, is transmitted even after a long time. Hardly any disease clings so tenaciously to dwellings and furniture. It can be transported through the air—though probably not to any great distance—certainly transmitted by spoons, glasses, towels and handkerchiefs used by the patient." . . . "The character of the disease communicated and local manifestation do not depend on that of the roiginal sufferer ; thus, mild cases may produce severe, and *vice versa*."

Practically, then, diphtheria is a disease that is contagious, infectious and communicable—as we know the other so-called contagious diseases to be—and is attended with a mortality almost as great.

Let us consider for a moment what course would be pursued were a few cases of smallpox or typhus fever to suddenly appear in the midst of a community—a possibility at almost any time—and, for purposes of further comparison, let us make the same inquiry concerning yellow fever or cholera, which, fortunately, is not probable, except at a seaport.

In response to this question, the reply of ninety per cent. of the people would be, in substance: "Remove such cases to a pest-house or hospital for such diseases, if one exists; if not, isolate the patient and all who have been in contact with him, until all danger of the disease developing in those exposed is over. Disinfect and fumigate the dwelling, and do not allow anyone to occupy it until such precautions have been taken." Why are such precautions necessary? may be asked. The substance of the reply would be: "Because these diseases are certain to spread, unless the proper measures to prevent are taken at the start, and are attended with great mortality; and unless the necessary precautions are taken, an epidemic of the disease is sure to ensue, and many deaths result, the mortality of these diseases being great."

It has been shown that diphtheria is a disease infectious, contagious and communicable, and, like the others, its poison has the power of clinging to various objects—such as clothing, furniture, bedclothes, playthings, etc., for an indefinite time, and then re-developing, thus causing new epidemics of the disease; its mortality is greater than in typhus fever, as great as in smallpox, yellow fever or cholera, and in some epidemics may even be greater than in these diseases.

What should we do when diphtheria appears in our midst? Have we taken the same precautions to check its spread as we would if typhus fever, yellow fever, smallpox or cholera were to appear? No! Is it not practically as contagious and the cause of as many deaths as any of the other infectious diseases? Yes! Have we been careful to isolate cases of the disease at the start, and quarantine those exposed, until danger was passed? Have we carefully and thoroughly disinfected and fumigated infected dwellings before permitting them to be again occupied? In fact, all efforts in this direction have been greatly resisted, and the disease soon spread to a point beyond control.

Contrast for an instant the apathy and indifference shown by the public in taking the proper steps to prevent the spread of this fatal disease and the interest and anxiety to check the spread of the other diseases that are commonly called contagious. Were the same indifference and neglect shown in cases of smallpox, typhus fever, cholera, and yellow fever, extensive epidemics would follow, and countless lives would be lost, which are now saved by the enforcement of sanitary measures. Instances have been known where the public, during the prevalence of an epidemic of diphtheria, were content to sit with folded hands and see child after child die, and even go so far as to refuse to assist sanitary officials acting in an official capacity to prevent the disease spreading. The public were rewarded by seeing the disease spread, and numbers of children carried off who might be living to-day, had the epidemic been checked. What should we do when diphtheria makes its appearance? There is but one answer: To use exactly the same measures as would be employed against the other contagious diseases having a high death-rate, and which spread rapidly unless vigorously combated at the first outbreak.

Completely isolate the very first cases; quarantine every exposed person, until all danger of the disease developing in those exposed is over. Fumigate thoroughly the dwelling occupied by such a case, before permitting it again to be occupied. Prompt removal of the first cases to a special hospital, with quarantine of those exposed, would effectually check the disease.

Diphtheria being essentially a disease of childhood, there would doubtless be a popular prejudice against forcible removal of the little sufferers from the mother's care, and it is doubtful if a law to this effect could even be enacted. Fortunately the same object can be accomplished by another method, and one that is applicable to every community, however small—viz., complete isolation and quarantine of every dwelling containing a case of diphtheria, until it is well, and until sufficient time has elapsed for all exposed to be free from danger; complete and thorough fumigation of the dwelling, and destruction by fire of all clothing and bed-clothing used by the patient during the attack. That complete domiciliary quarantine of a house or houses containing an infectious disease is possible and practicable, has been repeatedly shown. An instance fresh in the minds of many is the outbreak of smallpox a year since at Johnsonburg, Pa.; here compulsory quarantine was rapidly enforced, and the result was that the epidemic was quickly suppressed.

To obtain this end, the willing and hearty co-operation of the public with physicians and sanitary officials is absolutely necessary, and this alone is not sufficient. We must have the laws necessary to accomplish this enacted, with full power to enforce them, and sufficient appropriation to defray the expense entailed. In no other way can the necessary isolation and quarantine in an epidemic of diphtheria be obtained, and this is the only method by which we can hope to eradicate this disease, as we have done with smallpox and the other infectious fevers. In a very brief time the good results accomplished would teach the public to regard diphtheria in its true light, as being equally dangerous as the other dread diseases, and their hearty assistance would be given our officials in their good work. Until we secure this power and the means to accomplish it, we will see diphtheria spread and countless lives sacrificed—many of which would have been saved, had the disease been vigorously combated at the outset by that good system of Compulsory Domiciliary Quarantine which has been so successfully employed in infectious diseases.

The Prevention and Quarantine of Scarlet Fever.*

BY E. CRANCH, M.D.,
Erie, Pa.

ALTHOUGH this paper is to treat of so inflammatory a subject as scarlet fever, it will not be necessary to use any inflammatory language, or to magnify the subject; it is only intended to attract attention forcibly to some wholesome and unwholesome truths in regard to scarlet fever and its sanitary management. It is admitted by all that scarlet fever is abroad in the land, and that it is in the highest degree contagious; that it spreads by contact, by air, by clothing, even by letters and books, and certainly by dogs and cats and other domestic pets, such as boys and houseflies, in their migrations from house to house.

Two or three cases, well known to the writer, will illustrate the ease of its transfer from an infected house to any unwary by-traveler or visitor who happens to be susceptible to its blandishments. Of course, one who has had it, does not need to fear its effects, beyond the chance of a sore throat, generally absent and seldom severe. But all visitors, and especially attendants, may act as carriers from the sick to those who have never had it.

Let no one speak too lightly of it, though so many cases are and have been light, for who knows how soon its blasting touch may wither the fairest blossom in the garden of our hopes, or how soon its scarlet conflagration may be a signal of devastation in some happy home, causing the grave to yawn for the best beloved of many a household. God grant that its ruddy terrors may be held in check for us, and that its baleful torch be not lighted on our hearthstones.

To show the way to turn it aside, to show its burning destruction, is in some measure the object of this paper, not alone by the essay itself, but still more by the discussion that it is earnestly hoped and intended may follow this appeal to caution.

Well, the cases of contagion alluded to were these: first, a boy living in the country was sent a long way off to bring home a goat, and was charged to avoid a certain neighbor's house, where scarlet fever was in full possession. Going out, the obnoxious house was easily avoided, but on the return the goat was willful and insisted on dragging the unlucky youth right over the porch of the prohibited mansion, when just then the door was opened, and a full breath of the tainted air inhaled by the panting driver of the wicked goat. It was only a whiff, but it did the business, and in one week little Jabez justified the bad omen of his name by "bringing sorrow" in the shape of a fine case of scarlet fever.

Another case was contracted by waiting on the doorstep of a house and then joining a caller, who had only gone in for five minutes, but long enough to bring out a supply of scarlet-fever poison in the air that clung around him.

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* Read before the State Sanitary Convention at Erie, Pa.

One more case was that of a young girl whose mother had a dress come home from a house where there was a recent case of scarlet fever. The dress was undone and tried on in the little girl's presence, and in a week she had the fever, with no other possible source of its infection. The poison is one of the most diffusive of all, and easily retained by the clothing, furniture, carpets, walls, etc., of any room it has been in. Yet a closed door *may* be enough to keep it in a room or house, and a few minutes in the open air *may* be enough to scatter it free from the clothing, but in all such cases there is more or less risk of contagion.

Very much to be dreaded is this quick, subtle, yet evanescent poison, for it has done much to fill our cemeteries, our deaf-mute schools, our insane asylums and our hospitals for chronic diseases.

In the hope that strict isolation and preventive measures may some day make the scarlatina or scarlet fever or scarlet rash (for these are only names of the same disease) as comparatively rare and as much under control as the dreaded smallpox, the subject of prevention will now be spoken of at some length.

Prevention, or prophylaxis, includes both prevention by medicine or disinfection, and isolation or quarantine. We will speak first of medicines that may be taken to lessen susceptibility, and reduce the chances of contagion to those taking such medicine. In the case of smallpox, the use of the modified virus of a kindred disease known as cow-pox, has long been used by inoculation, called vaccination, to prevent or limit the violence of the true smallpox. But the inoculation by the blood presents so many dangers in the way of the introduction of animal diseases and septic virus, that the only safe mode of practicing such protection seems to be the exhibition of the modified virus of the cow-pox by the mouth—experience showing that the digestive juices resist the complicating poison better than does the actual blood of the scarified or "vaccinated" arm. Just so in scarlet fever; it is obviously not possible to safely inoculate the blood with any modification of so subtle a poison, but in a kindred vegetable poison, the juice of the deadly nightshade, belladonna, we find at once a preventive and a remedy for the great majority of cases.

The mistake commonly made, and the most frequent source of failure in the use of the potent belladonna as a preventive or as a remedy, has been and always will be the using of belladonna too strong. It must not be given, as some have tried it, in doses of the extract sufficient to dilate the pupil of the eye; but let it be given in an infinitesimal portion, such as is found at the homœopathic pharmacies under the name and rank of the 200th potency of belladonna, and let a dose be given once or twice a week during the exposure, if in the same house, or once a month if only in the neighborhood, and the disease will either not be taken, or its manifestations will be slight.

In all cases, however light, the same care and watchfulness are always needed to guard against possible complications and sequelæ. Prevention includes, further, such means of disinfection in the house and room as will lessen the violence of contagion, and at the same time not be injurious to the patient.

The burning of sulphur is valuable; but, as Dr. Squibb has pointed out, no thorough work is done by dry sulphur-smoke; it must be rendered moist by the presence of the vapor of water. Dry sulphur-smoke does not seem to lay hold of the germs; but it may be easily moistened in this way: Stand the dish or can containing the sulphur to be burned into a dish of water, or into a dish of wet sand, or let water be boiling on a stove close by; and by these means you will be able to vaporize enough water to moisten the sulphur-fumes and render them sufficiently active.

It is proper to protest against the burning of sulphur or of any acrid smoke in the presence of the patient. The makers of Spencer's fumigating pastilles, which contain a portion of bichloride of mercury, claim that they may and should be burned around the sick-bed; but personal observation has proved that much harm may result from such poisonous fumes. Although the patient may tolerate them, it is because sensation is lessened in such cases, for those who speak of it say they have felt a swelling and aching of the throat, and a manifest increase of fever, as the effect of using the pastilles too close. If boards of health are to have unlimited power, let them be very sure of their facts, for the experience of to-morrow may, as it often does, upset the theories of to-day, and condemn the practice based on such theories. The physician should be progressive, and feel tied to no rules so fast that he will not give them up if he sees a better way.

Another very useful disinfectant in the sick-room, as well as near it, is the solution of the chlorides known as Platt's chlorides. It may be used by wet cloths hung up round the room and over the doorway of the room, and used to wet the carpets and clothing when these are brushed and scoured.

Still another plan proposed is the burning or vaporizing of eucalyptol and turpentine. These may be useful, but at the same time must be used with caution about the scarlet-fever patient, for fear of irritating the lungs and the kidneys, which are peculiarly sensitive to these pungent agents.

Penciling the throat and nose with antiseptic applications is also of very dangerous utility, it certainly cannot destroy the contagion, and it may be of great danger to the patient.

All personal discharges from the nose or mouth and elsewhere should be at once burned up or promptly disinfected, but the body of the patient cannot safely be subjected to such treatment.

The value of fresh air in the house and room is incalculable; fresh air and sunshine will destroy all the poison as quickly and more safely than many of the common disinfecting agencies. Sufficient warmth must always be had, but fresh air is imperatively demanded. All dishes and clothing used should be kept separate and cleaned by themselves. Persons in attendance on scarlet fever, however thoroughly they may have had the fever themselves, are frequently liable to a sore throat, often of a diphtheritic character, for the poison seems always first to attack the throat. This secondary sore throat may itself be contagious, though slight in itself, and therefore is a proper source of solicitude.

An occasional gargle of water containing alcohol or brandy, and the daily use of a dose of belladonna 200th, will generally prevent such sore throat.

Let as few as possible be around the sick with scarlet fever, and exclude all visitors, even those who may have had it. Let those who go out to work, or to purchase for the family, be others than those who nurse the sick in the house, and let the city and the physicians see that no one suffers by too great isolation; no starvation or cold should be forced on any household because of the necessity of protecting other citizens. But no good end is ever gained by concealing the fact that scarlet fever is present, and the placard should make the fact public. When inmates of an infected house are abroad, they should avoid crowded places until they have been some time in the fresh air, or have exposed themselves to the vapors of moistened sulphur-smoke.

In regard to schools, it is proper that children from a scarlet-fever house be kept at home long enough to be sure they will neither have it themselves nor carry it to others. Most of the harm in spreading the disease is done by letting the little patients out among their playmates before they have fully recovered.

We are now right in the consideration of the last form of protection—quarantine, with its necessary isolation. The Academy of Medicine of Paris, France, in 1882 adopted a rule fixing the period of isolation proper for scarlet-fever patients at forty days. At the same time they ordered that other diseases should be kept by themselves, thoroughly isolated, as follows:

Smallpox, 40 days; chicken-pox, 25 days; measles, 40 days; mumps, 25 days; diphtheria, 40 days; followed by bathing and change of clothes, the old clothes to be baked, fumigated and scoured before subsequent use. The custom in Erie is to observe a much less period of isolation, often too much less, with great danger of spreading the diseases. Several oversights have prevented the writer of the present paper from cabling to Paris for advice as to whether these rules of isolation are still in force, but it is presumed that they are.

One very important reason why scarlet fever should be so carefully isolated even by aid of placards on houses, which have not yet been used in Erie, is the fact that any case of scarlet fever, known by other names, as scarlatina and scarlet rash, may give rise to, or be complicated with, diphtheria; and it is a fact capable of the strongest proof that many cases reported solely as diphtheria are in reality forms of scarlet fever, while the results are just as fatal and as disastrous as in diphtheria of any other form.

This relation of the poison of scarlet fever to the production of diphtheria is not enough known to the public, for it is a fact that any case of scarlet fever may have or may give rise to diphtheria in its worst forms. And it is important to recognize this, for scarlatinal diphtheria is not only just as dangerous as common diphtheria, it is even more dangerous in its liability to affect the kidneys, or to be followed by extensive ulceration and sloughing of the throat and ears.

Scarlatinal diphtheria also often demands a different treatment, and one child at least is believed to have died a victim of diphtheria, the fact that it was caused by scarlet fever not being known till after death, when the next-door family was found to have had scarlet fever, but thoughtlessly or wickedly kept it concealed. How important is it then that every case of scarlet fever should be most thoroughly known, by report and by placard, and the quarantine enforced a sufficient number of days to be effective. It is not to be denied that light cases will always be apt to escape notice or recognition, and so keep the disease going, but it is none the less our duty to keep up the reporting, placarding and isolation of all known cases of scarlatina and the administration of the homœopathic dose of belladonna to well neighbors as a preventive.

Forty days may seem an unreasonably long time to isolate a case that may be well long before the forty days are over; but when we think of the peeling of the skin that follows scarlet fever, and the terrible results that are liable to occur from a lack of caution during convalescence, both in the shape of danger to the patient and danger to the neighbors, and the certainty of contagion to all concerned who are in any way susceptible, it seems as if forty days were none too long a time to keep the patient himself secluded, although under proper precautions of fumigation by moist vapors of sulphur and plenty of fresh air, other members of the family may be permitted to go about as usual, before the expiration of the forty days. All books, toys and clothing used during the period of isolation should be removed, destroyed, or thoroughly baked and disinfected, the walls of the room may be rubbed with slices of fresh bread, to remove all germs, and then newly papered, whitewashed or calcimined, before new tenants are allowed.

It is not the place here to say much of treatment, only to call attention to the dangers of taking cold, the great and often fatal dangers of the external use of cold water, in baths or cold packs; the danger of the common chlorate of potash, as liable to bring on fatal inflammation of the kidneys; and the importance of calling a physician early in the case.

As a parting word, remember that scarlet fever, besides its own many and great dangers of deafness, dropsy, stiff joints, etc., may have with it, or give rise to, the worst forms of diphtheria, and that belladonna 200th and complete isolation are its best preventives.

Hospitals for Contagious Diseases.

BY C. A. LINDSLEY, M.D.,

Secretary of the State Board of Health of Connecticut.

EVERY Local Board of Health realizes at times the great desirableness of a place where a patient with a contagious disease could be well taken care of, and so isolated that he would not be a source of danger to others.

To provide such a place seems beset with many and great difficulties. To build and equip a hospital for such a purpose, with nurses and other necessary attendants, always in readiness to receive patients, is thought beyond the financial ability of all small towns. It would appear to be equally impracticable for a number of neighboring towns, to unite in providing such a hospital for common use, for that implies for many of the patients too long a distance for transportation.

Now let us clearly understand what is the real use of an Isolation Hospital. Is it, as many think, chiefly useful to care for patients in an epidemic of contagious disease? No. That is not its best or most important use. An Isolation Hospital serves its highest purpose as a preventive of epidemics. How? Simply by caring for the first case in a community. Contagious diseases only spread by contagion.

If the first case of any contagious disease is so guarded that others are not exposed to it, there can be no epidemic. But with every additional case which occurs, the difficulties of preventing still further contagions, are multiplied. Hence to prevent an epidemic, it is only necessary to keep the first case from communicating the disease to others. That is the best work which an Isolation Hospital can do, viz., affording the place and means of taking proper care, in all respects, of the *first case* of any contagious disease which may appear in any village or town.

Hospitals are usually large buildings, imposing, costly structures. An Isolation Hospital need not be a large building. Any good, common-sized house, with two or three well-ventilated rooms in the upper part, in a salubrious location, sufficiently remote from other houses to involve no danger to their occupants, affords all that is needful in the way of building. A little stock of ordinary medicines, and a good stock of approved disinfectants, an abundant supply of bed linen, towels, etc., and some special furniture and appliances, which any good medical man could suggest, are all that would be needed in the way of equipment.

To provide such a place of refuge for a person with a contagious disease is not beyond the easy ability of any town in Connecticut.

In most towns, a house which would satisfactorily serve the purpose could be found, which could be bought or rented; or better, select the site and build for the purpose specially. Next, find a reputable family of adult persons, of not more than two or three in number, one of whom shall be a man, all of good habits, steady and trustworthy people. Give them the rent of the house free. Contract with them to receive and nurse, under the direction of the physician, what patients the Board of Health may send them, at a stipulated price. In this way it is quite practicable for any town or village to have a hospital for contagious diseases at an inconsiderable cost, which would be saved to the people tenfold, with every first case of contagious disease it cared for.

Above all things do not call it a "pest" house. Do not damn it with a name which will shock the sensibilities of those who may need to go to it. Call it a "Retreat," a "Temporary Home," or by any name which will not excite disagreeable associations.

Hygiene for Children.

BY JOSEPH F. EDWARDS, A.M., M.D.

(The Editor of this Journal was requested to give some "little talks" on hygiene to the pupils of a Convent School at Atlantic City, N. J. The interest which the children have displayed in this subject is, simply, marvelously great, demonstrating, beyond question, that, when popularly placed before the people, hygiene is a very popular subject. The following is one of the "talks," as delivered to these children.

LAST week I promised to tell you something about how to take care of your bodies, so that, even if the nasty little germs that we have been talking so much about do get into them, they will not be able to do you any harm. Now, by this time, I think you must have a pretty good general idea of how disease is caused, and I would ask you again to remember that it is always due to some disregard of the laws of nature.

You must remember that everything in nature is subject to the laws of nature; you must understand that there is no such thing as chance. Whatever happens in this world we call an effect and you will soon learn, if you do not already know, that there never can be an effect without a cause; if, when I came up stairs just now, I had stumbled and broken my nose you might have said that I stumbled by chance, but you would be wrong; I would have stumbled because I did not put my foot squarely and firmly on the step; so you see that my mis-step was the cause; my stumble was the effect, and my broken nose reminds me all the time of the relationship between cause and effect.

If you look out on the beautiful lawn between this house and the ocean, and see the bright green grass, you will be ready to believe me that unless Mr. Hickey had obeyed the laws of nature this beautiful grass would not be there. He knew that nature would not allow grass to grow in sand, so he brought first a lot of good earth; he also knew that grass could not grow unless seed was planted; so he put in the seed, but he also knew that the grass must have food to eat just as you must have it, so he covered the ground with manure; this nourished the grass and now you have a beautiful lawn as the result. If Mr. Hickey had disobeyed the laws of nature, instead of a beautiful, green, velvety lawn, you would find here and there a few uneven, ugly tufts of grass.

So it is with you all; if you obey the laws of nature you will be all strong, healthy, beautiful men and women; if you disregard these laws you will be sickly, weak, miserable, puny specimens of humanity.

Now the way for you to prepare your bodies so that they can resist disease is to live in obedience to the laws of nature. Now, let us take up these laws and explain them to you. First, nature insists on cleanliness; so clearly does nature make known the necessity of cleanliness that it has become a common saying that "Cleanliness is next to Godliness," in other words, that next to believing in and loving God, you should believe in and love cleanliness. Just think how God has made two-thirds of the world water; does this not make you think that God intended us to use water very freely? Away back, many hundreds of years ago, before the birth of our Lord, there was a certain sect of Jews, who differed from the other Jews in one thing only—that it was a part of their religion to take a bath every day—just think of it, these people were really guilty of sin if they missed one day from bathing! The Jews always have believed very strongly in the laws of hygiene or of nature, and it is a fact that the Jews always have been a very healthy people. But, just think of it, in these days, when it is so hard to get the average boy to even wash his hands, just think of it, that among this sect of Jews it was just as necessary for them to bathe every day as it is for you to go to church on Sunday.

It would probably be asking too much at present of the average American boy that he should take a bath every day, but I assure you that if you would get into the tub and scrub yourself all over as often as you can, it would go a great way towards making you healthy and strong. While soap and water are most important agents in promoting cleanliness, they are not the only ones; for it is not only your skin that you want to be clean, but everything about you. Do you know that a splendid place for the germs or seeds of disease to grow is the dirt that is so often found under the finger-nails of children and, I am sorry to say, of grown people too? So that a neat little pen-knife, with which to keep the finger-nails clean, is a great and important weapon in our battle with disease. Do you ever think that you ought to wash your head? No? Well you should. It is not enough to dash a little water over your face and hurriedly soak your hands in a thimble-full of water; you should wash your head and hair with soap and water at least twice a week. Do not be afraid of water, you cannot use too much of it.

I told you some time ago that you commence to die as soon as you are born. I explained to you that by this I mean that the tissue or matter that makes up your body is being continually used up in the every-day acts of living; if such were not the case you would not be obliged to eat. As I stand here before you, you see a certain object, but I am not now the same person that I was when I commenced to talk to you. I look the same to you, but every word that I have said, and every motion that I have made, and every look that I have given has used up some of my tissue. When I thus move my arm I use up some little of the muscles in my arm in making this motion; these particles of tissue that I use up have been made out of the beef-steak or the oatmeal that I have eaten for my breakfast this morning, and, now that they have performed their duty, now that they are used up, they are no longer of any use in my body; in fact, not only are they not of any further use, but if I keep them long in my body they will prove injurious to me—they will make me sick. So, you see, I am not now exactly the same person I was two minutes ago. I weigh just as much and look just the same, because just as fast as some of my tissue or matter is used up, more tissue, just like that which I have used, is set down in its place. Let me make this idea clear to you, for it is a very important one. If you go down to the beach this afternoon and look carefully at it, and then go down to-morrow afternoon and look at it again, it will seem to you that there is no difference—everything will look the same to-morrow as it does to-day—but it is not the same. The men with shovels and carts have carried off tons of sand, but into the holes, made by their shovel the ocean has washed sand so exactly like that which was there before that you cannot tell the difference.

The beach looks the same, but the sand of to-day is not the sand of yesterday. So is it with your bodies: every act of living uses up some of the tissue of the body, digs it out, as it were; but just as fast as it is used up, new tissue, exactly like that which has been used, is washed into the place where it is required, by the current of blood, that I have explained to you, is all the time flowing through your body.

So now you see, that when you think, or speak, or move, or walk, or dance, or play, or look, or listen, whenever you do anything, by so doing you use up the tissue that has been employed in this act. When I say you use it up, I mean that you have made use of the life that was in it; it is now no longer a living part of your body; it has lost its life in helping you to live. Do you understand me? This is a most important point and I would like to make it very clear to you.

Let us say that your body is made up of a very, very, very great number of little bits of bodies—millions and millions and millions of them. These little bodies are made out of the food you eat; each one of these little bodies is so small that you could only see it under the microscope, and they have different shapes; each one of these little bodies is alive; each one has its own life, and these little bodies, taken as a whole, make up your body as I see it. Well, now, everything that you do is really done by these little bodies and, in doing whatever they may be called upon to do, they lose their lives.

Have you ever seen a lima-bean bush grow? You know the seed is planted in the ground, and after awhile, when the shoot appears above the ground, it brings with it what looks like the bean that you have planted; but it is not the same; it looks the same. It has the same shape, the same outward appearance, but in giving the power to grow to the bush it has lost its own life. You might again plant this seed in the earth, but nothing would come of it. So is it with these little bodies that make up your big body; the little bodies in your muscle will make your arm or your leg move, but in doing this they lose their own lives. A moment before they were live little bodies, now they are dead little bodies; they have performed their duty and according to the laws of nature they have died in so doing. If one of you boys has a pocketful of marbles, and if you happen to be a generous boy, maybe you will give half-a-dozen to some playmate. This act of generosity has given you pleasure; the marbles have been the means then of giving you this pleasure; you may now buy six more marbles, like those that you have given away, and you will have just as many as you had at first; but the six that you have given away are dead to you; they have been the means of giving you pleasure in giving them to another; but, in giving you this pleasure, they have become dead to you.

Now, suppose I were to bring a live horse or elephant into this room; the sight would afford you much pleasure and the presence of the live animal would do you no harm. But, now, suppose, after awhile, this horse or this elephant dies; before long he commences to rot, and in a short time you are all holding your noses and asking Madame to let you go out. If she refuses and compels you to remain in the company of this dead, foul, rotting animal, after awhile you will have a headache and you will be sick at your stomach, and after a still further while some of you will die, because you have been poisoned by the elements that have been given off from the rotting animal.

I imagine that none of you will doubt the truth of what I have been saying and that there is no one here who would not get quickly away from a bad-smelling dead horse. Well now, when these little bodies that make up your big body die, the condition is just the same as when the horse or the elephant dies. These little bodies will rot just the same as the horse would, and will, just the same, poison you and make you sick. Just as you take in food, when you eat, to replace these little bodies, that have been used up in helping you to live, so must you get rid of these little bodies when they are dead or else they will poison you and make you sick. Now, there are several ways in which nature removes these little dead bodies from your big body, and one very important way is through the skin. All over the body, in the skin, are situated little sweat glands. When you are perspiring, in the warm days of summer, you are aware of the existence of these glands, but all the time—even in the coldest days of winter—they are working all the same. You think that the sweat which you wipe away is only water; well, a good part of it is water, but in this water there are lots and lots of these little dead bodies I have been telling you about. They find their way out from the inside of the body through these sweat glands. Well, now, the watery part of the sweat evaporates into the atmosphere, while the solid part—these little dead bodies—are deposited on the skin, and there they commence to rot, just as would the horse or the elephant. So far nature has done the work for you; now it is your time to turn in and work. Nature has brought this dead tissue from the interior of your bodies to the surface; now it becomes your labor to remove it therefrom.

There are an immense number of these sweat glands, so that you can readily understand that there must be an immense amount of dead tissue thus deposited on the surface of your bodies. Now, with all of this dead tissue lying around loose on your skin, and going through the process of rotting, just as does the dead horse, you can easily understand why it is that when you come into a room full of dirty people there is such a bad smell. Now, also, you can understand why bathing is so important, for it is only by frequent baths that all this dead tissue can be washed away from your skin. Will it not also be clear to you that your underclothing—the clothing that you wear next to your skin—must be very much soiled by this dead tissue; and it is this dead and rotting tissue that makes your clothing smell so badly when you have worn it too long. Now, after having your underclothing on all day, when night comes you should carefully turn all of it inside out, including your stockings, and hang all of the articles over the back of a chair, near an open window, so that, while you are sleeping, the air will be blowing about and through this clothing, thus removing from it the impurities that have become attached to it during the day. You should never, at night, sleep in any of the clothing that you wear during the day, because if you do you will deny it the chance of getting purified. But now, while you are asleep, these little bodies that make up your big body are also all the time dying, not as rapidly as in the daytime when you are awake, but, all the same, they are dying, so that when morning comes your night-dress will be soiled by this dead tissue, just as your day-clothing was, so that when you take your day-clothing from the chair by the open window you should hang your night-dress in the same place and let it so hang for an hour or two. No doubt you have already, yourselves, thought that the sheets and the coverings of the bed must be also soiled, as your night dress was, and so they are, and the careful, cleanly person will take all the coverings off the bed and hang them out of the window to air, and will not make up the bed until late in the afternoon. Now you see how soap and water and air are necessary to cleanliness; but what I have told you is not all. It will not do to have clean skins alone, you must be clean all over, inside and outside. Now, I have told you that these sweat glands remove a great deal of the dead tissue of the body, but not all of it. Some of it is removed by the lungs when you breathe. When you breathe in you take into your lungs oxygen and nitrogen, when you breathe out you give off carbonic acid. Now, carbonic acid is a mixture of oxygen and carbon; the oxygen that you have taken in meets the carbon that has been formed in the body as the result of the death of the tissue, and they unite to form carbonic acid, which is given out. Now, if the air that you breathe is not clean, that is to say, if it does not have enough oxygen in it, you can easily see how impossible it will be for this carbon to get out. Do not forget that the carbon in the body is really dead tissue, and that if it cannot get out it will poison your body and make you sick. Well, now, you can understand what I mean when I say that you must keep your lungs clean by breathing clean air. It must be clear to you that if you were shut up in a box, so tightly closed that no air could get into it, that after a while you would breathe in all the oxygen that was in the box; it would unite with the carbon in your body, and you would breathe it out as carbonic acid, so that in a short time there would be no oxygen, only carbonic acid, in this box, and you would soon die, because you would be obliged to take back into your bodies this carbon that you had given off and which would be poisonous to you.

Suppose I were to close all the windows and doors of this room and with cotton stop all cracks, then suppose I were to turn on all the gas-burners without lighting them. In a very little while your heads would commence to ache; then you would have a bursting feeling in your head; then you would become unconscious and then you would all die. Now, why? This gas which we burn is made up of two elements—carbon and hydrogen. If I turn the carbon into the room you must take it into your body when you breathe and, as it is poisonous to you, it will soon kill you. This same thing occurs when you breathe the air of a room in which there is not plenty of oxygen; oxygen, remember, will support healthy life, carbon will kill. A room that is occupied by human beings and to which the outside air does not have free access will be full of carbon, and, while, as a rule, there will not be enough to absolutely kill you, there will be so much that you will not be healthy. So you see that in order to be clean you must not only use soap and water, you must not only air your clothing, but you must air yourselves. You ought to spend as much time as possible in the open air and as little as possible in-doors.

Of course you know that God can do all things, and it has often occurred to me that if God had intended that we should live in houses, He would have placed our first parents, Adam and Eve, in a handsomely furnished house, with all modern conveniences, in the Garden of Eden. It would have been, certainly, just as easy for Him to have started humanity in houses as not, if He had so willed; but He did not, and from this fact alone I have always drawn a strong argument in favor of out-door life. If we go out among the Indians or among the different tribes of aborigines, who live in tents, and who move from place to place, passing their whole lives in the open air, we find very little sickness or disease among them. It is only when people congregate together, as in cities, that they violate the laws of nature and suffer the consequences thereof in sickness and disease. It is true that we find sickness in the country as well as in the city, but only where the laws of nature have been violated. Now, I think you probably understand what cleanliness means and why it is so necessary to health. You understand that it means soap and water all over the body; it means clean finger-nails; it means airing the clothing that you wear, both by day and at night; it means airing the bed-covering; it means plenty of air, of pure out-door air, in your lungs, and it means one of the greatest elements in the promotion of health and the prevention of disease.

Next week we will take up some more of nature's laws and explain them to you.

A Sanitary School-Room.

THE school building should never be more than two stories and basement high. The ceiling of an ordinary school-room, according to the number it will accommodate, should be from eleven to fourteen feet high. The lighting of the room should be ample, the window-space never less than one-fourth of the floor-space. Lighting from two sides should be from left and rear, but never left and right. The walls are best of some delicate tint. The old-time white wall is irritating to the eye. A hard surface, which can be easily washed with soap and water, is to be recommended. For the greatest convenience the room should be about thirty-two feet long and about twenty-six feet wide. Forty pupils are enough for a room of that size, and never should the number exceed fifty. The floor should be of hard, polished wood, which absorbs little and is easily cleaned. The above proportions would give each pupil at least twenty square feet of floor-space and nearly three hundred cubic feet of air-space. The ventilation should be perfect; it should be near the floor. Each pupil should be supplied with 2,000 cubic feet per hour, and certainly not less than 1,500 feet. With a large number of pupils in one room, this can only be effected by some mechanical means—best by a central ventilating shaft, heated by the smoke-stack and connected with the rooms by flues. Earth- or dry-closets should be used, thoroughly deodorized, frequently emptied, and the retiring room kept sweet and clean. Such premises are exemplary object-lessons for the young, and not even excepting children of the largest growth.

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EDITORIAL.

The Quarantine Station Commission of Pennsylvania.

THE establishment of this Commission by the last Legislature was the outcome of a sentiment which originated twenty years ago and which has been steadily gaining ground ever since, that the location of the present Quarantine Station of the port of Philadelphia, however appropriate it may have been a hundred years ago when Philadelphia was little more than a village, has with the immense growth of the city and the rapid development of industrial enterprises and increase of population along the banks of the Delaware become unfortunate, constituting in fact rather a menace than a protection to the cities of Philadelphia and Chester and the densely peopled district lying between them. The following is the text of the joint resolution :

IN THE SENATE, MAY 13, 1891.

"*Resolved*, (if the House of Representatives concur) that the Governor be and is hereby authorized to appoint four persons who shall, with the Governor of the Commonwealth, constitute a Board of Commissioners, whose duty it shall be to communicate with the proper authorities of the Federal Government, or of any State, with a view of obtaining such concessions as will enable the Board of Health of the City of Philadelphia, or the Commonwealth of Pennsylvania, to secure a suitable site for a Quarantine Station, at some point remote from the centers of population, on the Delaware river. The Commissioners shall also inquire into the feasibility of establishing a joint Quarantine for the protection of all the ports on the Delaware river and bay, to be controlled by the several States bordering thereon. The Commissioners shall report to the next Legislature and shall receive no compensation for their services, but shall be allowed their necessary and actual expenses for traveling, stationery and clerk hire."

The appointments of his Excellency, Governor Pattison, under this resolution were Mr. John Huggard, of Philadelphia, Dr. Henry Leffman, Port Physician of Philadelphia, Dr. Benjamin Lee, Secretary of the State Board of Health, and Mr. Andrew Osborne, of Delaware county. In response to the official notification of the creation of this commission, his Excellency, the Governor of Delaware, has named Dr. Wm. P. Orr, of Lewes, Surgeon in charge of the U. S. Quarantine Station at the Delaware breakwater, and Messrs. E. R. Cochran and J. F. Budd, of Middletown, as commissioners, to meet and cooperate with the Pennsylvania Commission.

In the prosecution of its important mission, the latter has visited the Lazaretto, and examined the shores of the Delaware, in Pennsylvania and Delaware, as far down as Reedy Island, in order to satisfy itself as to whether a site possessing the necessary qualifications could be found. The Commission felt that, before proceeding further in its investigations, it would be nothing more than an act of courtesy to the various commercial organizations of Philadelphia, to afford them an opportunity to present their views, and to aid the Commission by any suggestions they might desire to make in reference to a matter so vitally interesting to them. Accordingly they were given a hearing before the Commission on Friday afternoon, May 13, at the Board of Trade Room of Philadelphia. The following bodies were represented: the Board of Trade, the Maritime Exchange, the Commercial Exchange, the Vessel Owners' and Captains' Association, the Board of Port Wardens, the Pennsylvania Pilots and the Delaware Pilots.

Major C. W. Raymond, of the U. S. Engineer Corps, in charge of works on the Delaware; Dr. Wm. B. Atkinson, Medical Inspector to the State Board of Health for the Delaware District; Mr. Howard Murphy, C. E., Engineer Member of the State Board of Health; Dr. Wm. H. Ford, President of the Philadelphia Board of Health; State Senator Elwood Becker, and Representatives Samuel Crothers and Ward K. Bliss were also present by invitation.

While the expediency of the removal of the present station is not a question on which this Commission is called upon to report, yet it was considered wise to allow some latitude of expression on this subject, and arguments *pro* and *con* were heard. The Philadelphia organizations expressed themselves as sufficiently well satisfied with the present location and deprecated its removal. Their opinions were evidently actuated by that spirit of mingled timidity and intense conservatism which blocks every effort at municipal reform in that city and is rapidly relegating Philadelphia to a back seat among the sisterhood of American cities, and also evinced an ignorance of the fact that modern maritime sanitation, with its improved methods and appliances of which the Philadelphia station is entirely destitute, is constantly lessening the interference with commerce while at the same time it increases protection to communities.

A "new Philadelphia" certainly will be incomplete without a new Quarantine Station, equipped at least as well as those of New York, New Orleans, Charleston and Savannah.

The Fear of Death.

ALMOST universally does there seem to exist a fear of death; there is a dread, an illy-defined, yet painful train of sensations associated with the thought of death in the mind of nearly every human being, carried to such an extent with some that the subject of death is a forbidden topic in their presence.

The uncertainty of the hereafter, even to those of a most deeply religious turn of mind, will account naturally and rationally for an aversion to dying, for, as an eminent clergyman once answered, when asked why he was so afraid of death when he had always led such a good life, "When I am here, I know where I am; when I die I do not know where I will be." This uncertainty is all-sufficient to account for a repugnance for death and it is not of this that we write; it is rather to combat and deny the very generally prevalent idea that the act of dying is, of itself, a process to be dreaded because of the physical and mental suffering that it entails.

Such is not the case; as one falls insensibly into sleep each night, so does he, finally, fall insensibly into his last sleep. When the moment of death arrives the sensibilities, the intelligence, the intellect, the reasoning and perceptive powers have become so weakened and so altered by the disease that is proving fatal, that there is, to the individual himself, a very different conception of his dying condition from that which, when in robust health, he has pictured to himself that it would be when the supreme moment arrived.

As a rule, a dying man is a contented, happy man, absolutely free from suffering. To the bystander, the heavy, labored breathing, the tossing of the head, the twitching of the muscles, mayhap, even severe convulsions, will convey the impression that the departing one is in great suffering. Far from it; he is totally oblivious to pain; he suffers absolutely nothing, the anguish is confined solely to those who stand helplessly by.

Understand this statement correctly; it is, we would affirm, a physical impossibility for a dying person to suffer; a clear intellect is a fore requisite to the appreciation of pain, and at the moment of death, the intellect, though, oftentimes, seemingly clear, as the laity understand the word, is not in that state of acute receptivity, so to speak, necessary to the appreciation of suffering.

Console yourselves, therefore, as to yourselves, when your time comes; console yourselves, as to your friends who are, at intervals, dropping out of the stream of life; remember that death does not entail, in the act of dying, the suffering that has been generally, popularly attributed to it.

Phagocytosis.

CERTAINLY no novel could be more fascinating than a description of the warfare between disease and health, so to speak, which is now spoken of as *phagocytosis*. Do not be frightened; skip this long and nasty word, if you please, and read only what it means.

We have, to-day, abundant evidence that most, if not all, of our acute diseases, such as scarlet fever, diphtheria, measles, typhoid fever, etc., are caused by the entrance into the system of minute germs, or seeds, or little living bodies, who, upon securing an entrance, elaborate, within themselves, and set loose certain chemical agents, which are capable of so impressing the functions of the body as to give rise to the various manifestations that characterize the disease.

Do you see how closely these microscopic processes resemble the grosser operations of man himself, in time of war. When an invading army has gained entrance to a besieged city, it is not the men themselves, as men, who destroy the government, and the buildings of this city; it is rather agencies that are made potent by the men; agencies that are carried into the city by the men, and there let loose; the powder, the fire, the sword, the gun, the cannon, could not, of themselves, gain entrance to the city; but, carried there by men, and used therein by men, they become the real active agents of destruction.

So is it with these little germs, they gain access to the citadel of life, the human body, either by strategy, hidden away in our food or drink, or through a breach in the wall, as an abraded surface; and having once gained an entrance they "let loose the dogs of war" to prey upon our vitals.

But there is within the body of each of us an army of defense, in the shape of an infinite multitude of little bodies, who are bitter enemies of the invading germs and who are always ready and on the alert to wage active warfare with them. Immediately upon the entrance of any disease germs, their very presence so irritates and angers our good little friends that, with all possible speed, they hasten to the seat of entry and at once precipitate themselves into deadly combat. We say deadly combat advisedly; for this battle admits of no truce. If our friends are victors (and by the way, they are cannibals, for they not only kill, but also eat their foes) we are safe; if our friends are overwhelmed, then the disease that is caused by the particular germs that have conquered, claims indemnity in the shape of suffering.

How fairy-like this reads; a battle of infinitesimally small pigmies; a battle, upon the result of which rests the welfare and perhaps the life of the individual whose body is the battlefield. Almost mythical as this tale seems, it is based upon scientific truth, and from it we can draw a valuable hint in the prevention of disease.

According to the laws of nature, the army of defense is designed to be always more powerful than the army of invasion. When such is the case, it is evident that disease cannot gain a foothold in the body. It must be evident to your reason that the little germs that cause disease—infinitely small and capable of reproduction with amazing rapidity—must be nearly everywhere present and in great numbers, so that every one is nearly always taking them into the body; but, as we say, the army of defense being stronger than the army of invasion, the assault is generally effectively met, the enemy defeated and disease averted.

Therefore can we say that the maintenance of health is literally a perpetual warfare with disease. But, if the army within the body is in a state of effectual strength and discipline, the battle is so short, the victory so decisive, that we are totally unconscious of the warfare that has been going on.

Is it not now clear to you that the best means of protection against acute disease, the best way to render yourself proof against the invasion of the army of sickness and death that is forever on the war-path, is to so maintain the strength and discipline of the army of defense that it is ever ready for victorious work.

Can you do this? Undoubtedly. As the little soldiers within your body are really parts of yourself, it must be clear that if you keep yourself in good condition, these warriors will share in this general good condition, and will be, therefore, the better able to resist the enemy. By learning the laws of nature and obeying them, by heeding the little hints that we are, from time to time, giving in this journal, you will be able to organize, equip and maintain within yourself an army that will be ever ready to effectually resist any onslaught that the legions of disease may make upon you.

NOTES AND COMMENTS.

Diphtheria Propagated by Infected Rags.

L. I. Rhea (*Med. Brief*) mentions a case in which diphtheria appeared to have been contracted from some rags that had been taken from a house where that disease had prevailed nine years before.

The Wax and Wane of the Honeymoon.

My own. My own precious. My own precious darling. My own precious darling little wife. My own precious darling Hattie. My own precious Hattie. My darling Hattie. Darling Hattie. Dear Hat! Say, Hat! Hat!!

Perspiring Feet.

Wash the feet at night in very hot water, put on white cotton socks, and immerse the feet thus covered in methylated spirit poured into a basin, wear the socks all night, they will soon dry. In a week the cure will be complete.

Infant Mortality in France.

At a recent meeting of the Society for the Protection of Children in France, Dr. Rochard (Chairman) stated that France loses every year 250,000 infants, and that out of this number there are at least 100,000 whose lives could be saved with intelligent care.

Local Application for Pimples.

Rose water	8 ozs.	2½ drams.
Spirits camphor	1 oz.	
Sulphur, precip.	2½ ozs.	
Acacia, pulv.	2 drams.	

Increase of Slum Population in Cities.

The United States Commission of the Labor Bureau publishes some interesting facts relating to the increase of population in the congested wards of several cities. In New York the increase in the overcrowded districts was in twenty years 9.38 per cent., while the increase for the whole city was 60.81 per cent. In Philadelphia there has been a loss in the compact wards in twenty years of 6.56 per cent., while other portions of the city show an increase of 68.91 per cent., and the total gain for the whole city was 55.33 per cent. In Boston for ten years the slum population increased 1.04 per cent., while the other parts of the city increased 31.96 per cent. The report shows that the crowded population of our cities is on the whole slowly declining.

Gout and the Use of Sugar.

Dr. Jonathan Hutchinson, the great London physician, forbids his patients who are suffering from gout, the use of cooked fruits, if eaten with sugar. The employment of cane sugar he finds particularly injurious. Ripe fruit, eaten raw, without the sugar, is harmless.

A Hard Condition.

A London physician, who advertises in the daily papers that his medicines are powerful, not poisonous, but pleasant to the palate, lays down as a necessary condition for his women patients that they leave their corsets at home. He is said to have quite a large female clientèle nevertheless.

Horse, Donkey and Mule Meat.

The *British Medical Journal* says that during 1891 the people of Paris consumed 21,291 horses, 229 donkeys, and 40 mules—the meat weighing 4,615 tons. It was sold in the shops at from 2d. to 10d. per pound. Only one-third was sold fresh and undisguised, the rest being made into sausages.

How to Rid a House of Fleas.

A correspondent of the Washington *Star* says that he completely rid a badly infested house of fleas in two nights by a very simple procedure. He placed sheets of sticky fly paper on the floors of the several rooms, each sheet having a piece of fresh meat in the centre. The fleas jump for the meat and fasten themselves to the paper.

The Drainage of Cairo.

The Cairo correspondent of the *Daily News* states that a commission of engineers has sent in a report to Sir Colin Moncrieff on the drainage of Cairo. Sir C. Moncrieff will submit the scheme to the Ministers. The original outlay will amount to half a million sterling. It is proposed to construct huge sewers which will deposit their contents into a reservoir, whence the sewage will be pumped out on to a tract of land.

Competitive Dietaries.

It is pointed out by *The Lancet* that cornmeal was the grand necessary of life to those legionaries who, led by Cæsar, subdued the world, and who counted themselves starved and were apt to mutiny if reduced to the "famine fare" of animal food. But we must remember that these soldiers were natives of a warm climate, and it is known that in warm countries animal food is not the necessity that it becomes in less temperate regions. With *The Lancet* we agree that, in the light of our present knowledge, a mixed diet is most conducive to health.

Polish for Finger Nails.

Peroxide of tin (putty powder),	5 ozs.
Tragacanth, in powder,	6 grs.
Glycerine,	4 drs.
Rose water, sufficient.	

Mix and make into a paste. Color with ammoniacal carmine solution.

The Proper Temperature for Beverages.

The proper temperature to which various beverages should be heated or cooled, is given as follows by a German author, viz.: Water, 54°; seltzer water and beer, 57° to 60°; red wine, 62° to 66°; white wine, 60°; champagne, 46° to 50°; coffee, 73° to 79°; beef tea, 100° to 125°; milk, 60° to 64°; hot milk, 93° to 95°.

Cholera Among Sharks.

An Indian journal states that an epidemic of cholera broke out a short time ago among the sharks which infest the Indian Ocean. The bodies of seventeen British seamen, who had died of cholera in the harbor of Bombay, on the hospital ship, were sewn up in weighted canvas bags, taken out to sea, and cast overboard. It is believed that the sharks feasted upon the remains of the dead seamen, and thus became infected.

Reforms in Funerals.

The following resolutions have been adopted by the ministers of Henderson, Ky.:

In view of the great necessity for funeral reform in our city, we, the ministers, believe,

That Sunday funerals, whenever possible, should be avoided.

Second, That it would be better to conduct the services usually said at the grave and dismiss those assembled there before the filling of the grave, and that it should not be considered discourteous for anyone to leave the grave before the work of filling the grave has been completed.

BRAZIL has a law for the medical examination of persons about to marry, to determine their fitness. It is a sanitary measure that is found to be necessary to stop the transmission of scrofula, which at one time threatened to destroy the strength of the people.

M. FARGEOT has made a communication to the Medical Society of Lyons relating to a discovery by means of which he can obtain an imprint of any hand that has touched a piece of paper, or of a foot that has trodden the floor of a room. The basis of his method consists in making visible, by chemical means, slight traces of perspiration or sebaceous deposit.

Chewing Your Food.

Take two lumps of sugar and put them into a tumbler of water; take two more lumps, pulverize them and put them also into a tumbler of water. Take two spoons and stir; use your eyes and see that the pulverized sugar will dissolve in about one-half the time that is requisite to make a solution of the lumps. Now use your brain to think a little, and if you are not very obtuse you will understand why nature has placed teeth in your mouth.

Human Nose Not in the Centre of the Face.

A California physician makes the above statement, and explains thereby the difficulty many people have in keeping eye-glasses on the nose. The difference between the two sides, from centre of nose to centre of pupil, is, as a rule, from $\frac{1}{16}$ to $\frac{1}{8}$ of an inch—seldom more than the latter. The decentering, which results in lenses mounted in the ordinary way, is enough to interfere materially with perfect vision. It is the exception to find the nose centrally situated.

Prize for an Essay on Temperance.

It is stated in the *British Medical Journal* that the President of the French Republic has offered a Sêvres vase as a prize for the best essay on the following subject: "A Study of the Best Measures to be Taken by the Legislature or by Private Initiative for the Prevention of the Abuse of Alcoholic Drinks, and for the Obviating of its Dangers." The award, which will be in the hands of the French Society for the Prevention of the Abuse of Alcoholic Drinks, will be made in December, 1892. Essays, which must be written in French, should be sent on or before September 30th, to Dr. Motet, General Secretary of the Society, 161, Rue de Charonne, Paris.

Long Skirts.

In these days of sanitary enlightenment, when the gospel of cleanliness is so widely received, when a social reformer expresses his conviction that "soapology and scrubology" are equally as efficient, if not more so, in the elevation of fallen humanity than is theology; in these days, when so many of the dictates of fashion are in accord with the teachings of hygiene, we are at a loss to understand what diabolical motive has induced woman to make of herself a street cleaning machine. We are, however, gratified to learn that the Supreme Sanitary Council of Hungary has put its foot on these filthy trains and absolutely torn them off by issuing an edict absolutely forbidding their use. What folly it is for our women, most of whom walk, to take up with a fashion originating in a country where walking is, practically, a lost art. A long skirt in a carriage may be a nuisance, on the street it is a filthy abomination. Let us appeal to the good sense of our countrywomen that the reign of the long skirt shall be a short one.

Cleanliness.

How would you like to have for your constant companion a dead horse ; at table with you, when eating ; in bed, when asleep ; on the street ; in your study ; ever present, a bad-smelling, putrefying, dead horse. Not much, we imagine. Well, if your skin is dirty you are practically in the fellowship of this unwelcome and nauseating companion. A dead horse is a mass of decaying organic matter ; a dirty skin is covered with a mass of decaying organic matter and, for the life of us, we cannot see the difference between the two conditions.

Mortality of Diphtheria.

The comparative mortality of diphtheria in the principal countries of the world is as follows : England heads the list with only 41 deaths per 100,000 inhabitants. For the same number of inhabitants Belgium had 44, Holland 53, Switzerland 59, Italy 79, France 80, Germany 100, Scandinavia and Russia 110, Spain 112, Austria-Hungary 116, and America 140. The statistics were collected by M. Janssens, the Chief of the Burean of Medical Statistics of Brussels.—*Revue Medico-Pharmaceutique*, October 31, 1891.

To Hide Undesirable Hairs.

There are some women of the brunette type, usually with an olive skin, sometimes with a fair skin, who have the misfortune to bear upon their upper lip or on the sides of their face, just in front of their ears, a growth of fine, dark hair. The hair is of the lanugo variety, and is noticeable only on account of its dark color. The application, by means of a camel's-hair brush, of hydrogen peroxide, will bleach the hairs, and render them invisible except on very close inspection. As a preliminary measure, it is well to wash the growth with a solution of powdered borax in water, to remove the grease which adheres to every hair. The application should be made several times a day until the hairs are thoroughly whitened, and after that as often as is necessary to maintain the color.—*Maryland Medical Journal.*

Prizes of the French Society of Hygiene.

Dr. Péan offers, through the Société Française d'Hygiène, of which he is the President, a prize, consisting of one gold and two silver medals, for the best essay on "Colonial Hygiene," dealing practically with the principles of hygiene which should guide the European living in tropical countries, as regards his dwelling, mode of life, clothing, food and labor. Competing essays should be sent, before July 31st of the present year, to No. 30 Rue du Dragon, Paris. The subject for 1893 will be "Hygiene and Physical Education in Adolescence," serving as a supplement to three tracts already published on "Hygiene and Education in Childhood" (from birth to the age of twelve years.) The essays should not exceed thirty-two octavo pages in length, and should be handed in before August 1, 1893.

Postage Stamps and Influenza.

A correspondent of *The Lancet* suggests that influenza may be spread largely through the agency of postage stamps. He recalls a number of instances in which the disease followed the receipt of a letter from an infected place, and thinks that possibly the source of the infection was the saliva used to moisten the gummed surface of stamps and edges of envelopes, the mucilage, perhaps, being a suitable menstruum for the development of bacilli.

Corn Bread.

Corn-bread has various names in different localities. The general name of the article is Indian-bread. In Delaware, griddle-cakes made of Indian-meal are called corn-cakes ; in Maryland they are called cookies. Pone is the name for Indian-bread an inch or more in thickness and baked to a crisp crust top and bottom. In parts of New England corn-meal, baked into a thick, crisp cake, is called Indian bannock. The Puritans, it is supposed, learned the art of baking that bread from the Bannock Indians.

Human Mortality.

The annual mortality of the entire human race amounts, roughly speaking, according to a French medical journal, to 33,000,000 of persons. This makes the average deaths per day over 91,000, being at the rate of 3,730 an hour, or 62 people every minute of the day and night the year round. A fourth of the race die before completing their eighth year, and one-half before the end of the seventeenth year, but the average duration of life is about thirty-eight years. Not more than one person in a hundred thousand lives to be a hundred.—*New York Sun.*

Playing by Proxy.

People of the United States do a vast deal of playing by proxy, says Prof. A. R. Wells. After a great game of baseball, what large editions of our papers are sold, and how many hundreds of dandies, with cigarettes held in their nerveless hands that never felt a baseball bat in their flabby lives, spend their nickels to see whether the Chicagos or Cincinnatis or Clevelands came out ahead ! Better five hours with bat in hand, or speeding around the diamond, than a lifetime of newspaper reading about games played by others. Better a day's vigorous pull at the oars than attendance on all the regattas that ever were. Better a ten-mile walk on your feet than the witnessing of all the O'Learys and Westons that ever trod the sawdust path. Better a twenty-mile spin on your own bicycle than all the programmes of all the fancy riders on this planet. Better a thousand-fold the clumsiest activity of your own body and brain than the spectacle of the most proficient amusement-mongers this lazy world ever paid to do its playing for it.

Examinations for Arsenic in the Laboratory of the Health Department at Copenhagen.

In a report on this subject, C. Gram states that in all 412 articles were subjected to a chemical analysis for arsenic. Of this number 91, or 22 per cent. contained arsenic. Among 186 samples of wall-paper, 26 contained arsenic, 19, however, in minute quantity. Of 64 samples of wall-paper borders, 30 contained arsenic, 14 only in traces. Among 78 samples of cloth and ribbon, 17 contained arsenic, all in considerable quantities. Of 17 samples of artificial flowers, 3 contained a very noticeable quantity. Of 50 kinds of candles examined, 15 contained arsenic in considerable quantity, all of which latter, however, came from the same manufactory.—*Tidsskrift f. Sandhetsplei*, vol. ii., No. 4.

Earth Worms and Consumption.

In a communication presented to the Paris Academy of Sciences on January 25, Lortet and Despeignes (*Sem. Méd.*, January 27, 1892), after recalling the experiments by which Pasteur showed that earth worms often bring to the surface the spores of the anthrax bacterium from the earth in which animals that have died of that disease have been buried, said they had made experiments to ascertain whether these worms played a similar part in regard to the tubercle bacillus. They have satisfied themselves that earth worms may preserve within their bodies for several months, tubercle bacilli which retain their vitality and virulence unimpaired. Lortet and Despeignes therefore believe that under certain circumstances, the worms may be the means of disseminating the microorganisms of tuberculosis.

Japanese Cleanliness.

Which is the cause and which the effect we are not prepared to state, but that there is such a relationship between the notable cleanliness of the Japanese and the fact that they liberally support several hygienic periodicals we have no doubt. Dr. D. G. MacGowan, who writes in *The Southern California Practitioner*, tells us that the Japanese of all classes are intensely polite, clean, civil and courteous. Even the humblest homes are clean, with a cleanliness one sees nowhere else upon the globe. It is the custom for everyone to bathe at least daily. They are clean for the satisfaction it affords them. They have tubs at home. In the city of Tokio alone there are said to be from 800 to 1000 public baths, in which it is calculated 400,000 people bathe daily, the price of a bath being from one to two cents of our money. The national bath is a hot one, having a temperature of about 110° F. ; and medical men state that following the national custom is the only safe way, if one wishes to avoid rheumatism and bronchitis. Baths are frequently used in common by men and women, sometimes not separated at all, and sometimes only separated by a slightly raised partition or screen ; and it is very common to see coolies clothed only in a blouse and a pair of sandals, in the streets returning from the bath.

Disinfection of Stools with Whitewash.

Dr. Phuhl, in the *Revue Médicale*, states that the addition of two per cent. of whitewash containing twenty per cent. of lime to typhoid or cholera stools, will completely sterilize them within an hour. The whitewash must have an alkaline reaction. It should be well mixed with the fæces. It has been found that whitewash sterilizes typhoid and dysenteric stools in a half hour when the proportion of lime present is only four per cent. Similar results were not obtainable with a four per cent. solution of chloride of lime, or with a 1-50,000 solution of corrosive sublimate. Whitewash is also valuable in disinfecting the utensils used by patients suffering with contagious diseases.

Water for the King.

King Louis XIV, although given to excesses of various sorts, and a great consumer of poisons of various forms, was exceedingly particular respecting the water which he drank, probably through the advice of his wise physicians, who, although they knew nothing of microbes, had learned from experience the importance of pure water as a means of maintaining health. To make sure of having water of undoubted purity, all the water for the table service of the king was brought from a spring in the wood Ville d'Avray ; and special service was required to provide the fresh supplies of water from this pure source, the cost of which amounted, according to Taine, to more than $14.000 per annum —a pretty expensive price, one would say, to pay for a year's supply of water for the table, but doubtless a heavier bill has often been paid as the result of using impure water.—*Good Health.*

The Digestibility of Cheese.

It is the general opinion of the laity that the eating of cheese after taking food is an assistance to digestion. This view seems not to be in accord with the result of experiments made by von Klenze, as recorded in the *Allgemeine Medicinische Central-Zeitung*, No. 18, 1891. He made very thorough tests of the various forms of cheese found in the dietary lists. For the experiments he used an artificial digestive fluid, to which were added 50 cc. of fresh gastric juice and 3 cc. of hydrochloric acid. Into this he placed a gram of the cheese to be examined. Eighteen varieties were tested, and the following deductions made: Chester and Roquefort cheese took four hours to digest; genuine Emmenthaler, Gorgonzoler, and Neufchatel, eight hours; Romadour, nine hours; and Kottenberger, Brie, Swiss, and the remaining varieties, ten hours. Considering that in a healthy stomach digestion after an ordinary meal is complete in from four to five hours, it would seem from von Klenze's studies, that Chester and Roquefort cheese were the only kinds that were likely to be digested within this length of time, and that the other varieties, some of which are largely in use, not only did not assist digestion, but actually retarded it.—*New York Medical Journal.*

Coffee as a Cause of Itching of the Anus.

A correspondent thus relates a personal experience: "For many years I suffered from the most aggravated form of itching, which refused to yield to any one of the many remedies applied for its relief—nothing seemed to have the slightest effect in ameliorating the torture to which the intense itching subjected me. After exhausting the pharmacopœia I began to abstain from certain articles of food; one after another was dropped from my dietary for several weeks, but without effect until coffee was reached. An abstinence for a period of two or three weeks resulted in complete relief from the distressing symptom. As a matter of experiment the use of coffee was resumed for several days, with the effect of reproducing the pruritus; the experiment was tried several times with the same result. A year without coffee has been a year without pruritus." —*N. Y. Medical Journal.*

An Overdose of Gold.

In December last, a French soldier met with death by gold instead of lead. Having been accused of the theft of a sum of money, he followed the course, not unknown in the Orient, of secreting the stolen cash in his stomach. He swallowed the money, and by so doing was acquitted by the judge, because there was no tangible or exterior evidence of guilt. He was set free, but disease presently arrested him; he became the subject of an acute attack of indigestion, due to the ingested gold. This attack subsequently resulted in death. An autopsy was performed and there were found in his stomach twenty-one gold coins, of a value of eighty-five dollars to some former owner. The lethal dose of gold has not been recorded hitherto in the text-books on toxicology, but it can in the future be stated that the quantity above mentioned "has been followed by a fatal result."

Cobweb and Blood Poisoning.

Among the popular but ineffective and even dangerous means for stilling the flow of blood from wounds is cobweb. By the people in the country, especially, this material is easily obtained and frequently used by binding it upon the injured part, or by pressing it into the wound. By this means slight flows of blood that are without danger are arrested, while more serious bleedings usually persist in spite of it. But at the same time the wound is soiled to a serious degree, for often the cobwebs are collected from dirty and dusty corners. In the use of this material the rule which should never be broken is disregarded: to wit, to protect every wound, be it ever so slight, from every source of pollution, and if it is already soiled with sand, dust or dirt of any kind, to remove it and cleanse the wound as soon as possible with water that has been boiled and cooled again, or with a disinfecting solution. Another example of the harmfulness of this use of cobwebs has lately occurred. A gardener injured himself and put cobwebs on the wound to stanch the blood, thereby soiling the wound to such an extent that he died of blood poisoning.—*Schweiz. Blätter für Gesundheitspflege.*

Spring Water.

There is a very prevalent impression that spring water, issuing from the earth in some place favorable to its emergence and without artificial assistance, is, and must be, as a result of the circumstances, a pure water. Because there are mineral and hot springs, they are held as the exceptions.

If the water looks clear and has a fresh taste, it is believed to be nearly absolutely pure. Notwithstanding the water has been filtered by passing down through a stratum of earth, it must be remembered that there are frequently two hundred and fifty times as much carbonic acid in the soil as there are in the air, and that the water becomes ærated and charged with it, and that this aids in dissolving various substances found in the soil and the earth, and consequently springs come to have a great variety of chemical constituents in widely varying amounts. The strata through which water passes determines its purity or impurity, and the same want of sanitary care that would contaminate a well, will just as surely pollute a spring. The springs that do not show organic or inorganic constituents in the water, are very rare indeed. Typhoid fever has been directly traced to contaminated springs.—*Rhode Island Monthly Bulletin.*

Dust and its Dangers.

Dr. William B. Canfield read an excellent paper before the Clinical Society of Maryland in which he dwelt particularly on dust as a causative factor in pulmonary disease. He turned his attention chiefly to the existence of this state of affairs in factories, and he furthermore states that the treatment is to take the patient from his dangerous occupation, when the improvement begins at once. Owners of large factories are adopting stringent prophylactic measures in order that they may not lose so many good workmen. The best methods are:

(1) To prevent the formation or escape of dust by using wet grinding, or, by grinding in closed vessels. This is not always practicable.

(2) To prevent inhalation of dust by wearing respirators, etc., but these are uncomfortable and the men remove them at every opportunity.

(3) The removal of dust as fast as it is produced by using fans and air shafts. This is by far the best plan.

Still further the following rules should be enforced:

(1) Workmen should change their outer clothing after work.

(2) They should keep their faces and hands as clean as their work will allow.

(3) They should not be allowed to eat in the work-room.—*Weekly Medical Review.*

Poisoned by Canned Salmon.

The Lancet records the case of a previously healthy child of 13 years in whom death was attributed to the irritating action of canned salmon.

The Rain-Bath.

There is still one kind of bath, hitherto unused, which would be very advantageous, both to parents and children—I mean a thunder-storm bath. Physicians employ in their experiments on nervous invalids, electric air, electric plates, electric baths; but thunder, or rather thunder-water, they have not as yet prescribed. Have they never experienced that a person never feels so fresh, cheerful, and elastic as after a warm or tepid rain has penetrated to the skin? Since human beings, when dry again after a storm, feel so much invigorated, and the world of flowers still more so, why will they not receive this united fire and water baptism from above, and suffer themselves to be raised and healed by the wonder-working arm in the thunder-cloud?

One ought to have an especial rain or bathing suit of clothes, as a frequenter of the spring cloud-baths; and then, when there is promise of wet weather, make a rain party, and return home dripping.—*Jean Paul Richter.*

Food and Blood.

We would like to make clear what, we admit in advance, savors rather more of theory than of demonstrated fact, we would like to make clear an idea that we have in reference to blood-making. We have always felt that, while preserved and potted and canned meats and vegetables will, of course, make blood and will thereby sustain life, that the blood so made is not so full of potentiality as that which is elaborated from fresh food. Everything that lives must eat, be it vegetable or animal; the grass really eats manure and if the manure be overly stale (it is always stale to us, but is viewed in a different light by the grass), the grass so nourished will not be of the best; the pig that is fed on slops, on decaying food, is not equal to the pig that is fed on fresh food. So is it, we believe, with man; of course our advice will not persuade many of you to abandon ham, corned-beef, dried-beef, canned vegetables, canned lobster, salmon, and the like; we know very well that you will not only not abandon such food, but you will smile, probably, even at our suggestion; nevertheless, we are quite clear in our idea that the best blood is made from fresh food and that he who will so eat will have the best health.

Conveniences for the Bath.

I must tell the method I take for protecting my dress while giving my baby her bath. It is to wear a heavy twilled flannel apron, prettily worked with crewel. As the wee one is wholly enveloped in her bath sheet when taken from the water, the rough wool does not touch her tender flesh.

I use a large, soft sponge. The soap should not be put directly on this, however, as it toughens and hardens the delicate fibres, but on a soft flannel cloth. This soapy wash cloth should be rubbed thoroughly and briskly over the child's body, after which the sponge is used to remove soap and dirt. For the face, which should be washed first, no soap is required. For the mouth I use a diminutive cheese cloth handkerchief, neatly hemmed. For the ears I have another cloth of the same size, but made of somewhat thicker material. Both these and the sponge I rinse carefully after each using.

Once a week Midget Girlie is thoroughly rubbed with sweet oil, which renders her less liable to cold, and prevents her becoming—as our grandmothers would say—skin bound. Twice a week a very little powdered borax is dissolved in the bath water; this toughens her flesh and prevents her from becoming chafed. Should she be troubled with constipation I cause the water from the well filled sponge to stream over her lower bowels while she is in her bath. This will often afford relief without further trouble.

Do not be afraid of water in plenty, as it is one of the best strengtheners to a child's constitution.—*Ella Bartlett Simmons in Babyhood.*

Smallpox Warnings.

Our communication with England is now so intimate that it behooves us to take heed of the statement in *The Lancet* that smallpox is making insidious advances in a number of places, and at this season of the year the occurrence is one about which it behooves all sanitary authorities to be watchful. The disease has gained access to England in several of their port districts; and, whether from this cause or owing to infection from which they are rarely entirely free, the disease has manifested itself in some important centres of inland population. One of the latest warnings comes from St. Pancras, where, according to Dr. Sykes, seven cases of smallpox have occurred amongst waiters in hotels who have recently arrived from Switzerland, a country where the disease has for some time past been prevalent. Amongst the towns that have been the seats of smallpox on varying scales during recent months are Batley, Dewsbury, Leeds, Liverpool, Southampton and its vicinity, Great Yarmouth, Oldham, Nottingham, Huddersfield, and Cardiff, isolated cases alone having occurred in the two latter. At Dewsbury and Liverpool the disease continues without abatement.

Scale of Digestibility.

The following comparative scale of digestibility is given by M. Navarre (*Lyon Méd.*):

(1) Aliments always easily digested. Coffee and milk well sweetened; boiled brains; soft boiled eggs, or boiled soft; white meat of broiled fowl without skin or fat; the following fish boiled, broiled with butter, or fried in crumbs—trout, sole, perch, smelt, gudgeon, French sardine; all green vegetables, boiled and then cooked in butter or with a white sauce; sweet milk compounds; very sweet side dishes; very sweet and thoroughly cooked jams; sweetened rice; puree of potatoes; dry biscuits; calf sweetbreads, not larded; well cooked bread; very sweet fresh cream.

(2) Aliments tolerated less easily, and of which a patient can only eat a small quantity. Asparagus out of season; rice and butter; roasted veal; roast beef; roast pigeon; wild duck; pot-pie; smoked ham; foie gras; broiled

mutton kidney; partridge, quail, snipe, turbot, salmon, ray, oysters, various shell-fish, fresh cod; potatoes with jackets; Swiss cheese and others which are fresh; boiled calves' feet; sheeps' feet; tripe; new potatoes cooked in butter, and, in general, all sauces except the white.

(3) Aliments always badly supported, even in very small quantity. Fat soups; mutton (leg and chops); all larded meats, all black meats, all game except that mentioned above; pork and sausages and kindred meats; mackerel, mullet, lobster, crabs, sardines in oil, salt codfish; fried potatoes, and in general, all fried dishes; raw side-dishes, raw salads, and all dry vegetables, even in purees; and made cheeses.

Cranks.

To our way of thinking, one of the most unfortunate attributes of man is his apparent unwillingness to be unlike other men, his seeming dislike of originality—so far as he, himself, is concerned—and his sheep-like aquiescence in the doings of others.

Unwilling to be, himself, unique, it is this very attribute, this individuality, that he admires in others. There never yet was, what the world calls, a crank, who was not a man of originality, of character, of intelligence, a man who was literally one of the cranks that are instrumental in the onward movement of the world. Julius Cæsar, Napoleon, George Washington, Carlyle, Lincoln, Bismarck, were all cranks. The average, everyday individual who gets up, dresses, eats, walks, talks a little, smokes a little, dances, flirts, and in a passive way gives evidence that he is not dead, and goes to bed, such a person is not a crank; oh, no! he is only *a person;* he is an all-around specimen of aggregated organic life; he is here, and he himself knows the fact; but very few, outside of a limited circle, are, or ever will be, aware that such a collection of organic molecules has, at one time, crawled upon the earth. Like a worm, he comes, he crawls and he goes; like a beast, he is, for a time, an evidence of the wonders of nature; like any other animal or vegetable, he is here because the laws of nature so ordained, and, day by day, he moves along, offering to the few thoughtful cranks food for reflection upon the possibilities and the failures of humanity.

It is the bodies of these commonplace persons, these individuals who vegetate, who exist, but who really do not live, that offer the culture-beds for the maintenance, propagation, dissemination and perpetuation of disease. "Cranks" are generally healthy; he who has the individuality, the force of character to think and act for himself, he who has sufficient manly independence to care not for public opinion, he who is not afraid to be unlike other men, such a person generally enjoys good health.

He who does his own thinking and who acts for himself, based upon his own individuality, is what we understand the word "crank" to mean, and it is such "cranks" that we would urge all of our readers to become; for we are quite sure that crankiness, good health, happiness and longevity are very closely related the one to the other.

Nursery Powder to Cure Severe Chafing.

Gum camphor,	¼	oz.
Carbolic acid,	15	drops.
Oxide of zinc,	¾	oz.
English precipitated chalk,	2	ozs.
Oil of neroli,	5	drops.
Oil of rose,	2	"

Rub camphor to a fine powder in a mortar, using alcohol to reduce it, and mix the other components thoroughly. Sift through a bolting cloth of 100 meshes to the inch.

This powder is invaluable for healing raw and irritated surfaces and for curing sunburn. Mixed with three parts vaseline, or cold cream, it forms one of the most useful domestic remedies, in the way of a general healing salve, that can be suggested.

Ethnology of the United States.

Dr. Daniel. G. Brinton gives us some most interesting and most suggestive thoughts, in the course of an address recently delivered at The Academy of Natural Sciences in this city, when he declared that the descendants of the original settlers and early colonists, in those parts of the country which were out of the usual lines of travel and subsequent immigration, showed decided evidences of degeneracy, both physical and intellectual; the former being manifested by the exaggerated length of the limbs as compared with the poorly developed body, the lean or lank form, the sterility, or comparatively slight productiveness of the women, and the latter in the form principally of eccentricities of conduct, crankiness, and tendency to a form of insanity known as "systematized delusion," which is most frequently met with in small, isolated communities in New England, and also in the Southern States. Were it not for constant immigration from the Old Word, Dr. Brinton believes that in America the white race would ultimately perish. The principal cause for this lies in the fact that the conditions of life, the atmosphere and climatic character of this country, and the food, are all quite different from those to which the early settlers had been accustomed, and he holds that the white race has not yet become thoroughly acclimatized in the United States. Part of the degeneracy is attributable to the abuse of alcohol and tobacco; although these are subsiding causes—and, in fact, these agents used in moderation do not appear to exert any ill effect. He noticed in passing, however, as a physiological fact, that the smoking of a cigar produces a sudden, though temporary, depression of the vital functions, as demonstrated by actual experiment; and when this is frequently repeated, the result becomes very evident in deterioration of physical structure and functional activity. The tide of immigration has been mainly confined, for nearly a century, to that portion of the United States lying between the 40th and 44th parallels of north latitude. The portions lying both to the north and south of this belt have been left almost undisturbed, and in consequence afford a better opportunity of studying the effects of our climate and food for several generations. Although food is abundant, it is often badly cooked, indigestion is very common, and the physical organism suffers in consequence. He observed that nothing can be more true than the proposition that deterioration of physical structure must result in diminution of intellectual vigor and activity, although the statistics of the Provost-Marshal General's office, based upon examinations of a million of enlisted men, demonstrated that the average American soldier is taller and stronger than the European. The future of the white race in this country, according to Dr. Brinton, therefore depends upon immigration of the right kind of material to strengthen the stock, until the material conditions of our life are so harmonized with the individual as to favor the formation of a permanent variety of the human family. It would be suicidal to this country to absolutely prohibit immigration; but, on the other hand, efficient means should be provided to prevent the infusion of elements already degenerate, who are outcasts from older communities. Thus far the typical American cannot be said to have appeared upon the stage, in spite of the well-known caricatures of Brother Jonathan in the European humorous papers.

SPECIAL REPORTS.

State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania.

PRESIDENT,

J. H. McCLELLAND, M.D., of Pittsburg.

SECRETARY,

BENJAMIN LEE, M.D., of Philadelphia.

PEMBERTON DUDLEY, M.D., of Philadelphia.

J. F. EDWARDS, M.D., of Philadelphia.

J. H. McCLELLAND, M.D., of Pittsburg.

HOWARD MURPHY, C.E., of Philadelphia.

GEORGE G. GROFF, M.D., of Lewisburg.

S. T. DAVIS, M.D., of Lancaster.

BENJAMIN LEE, M.D., of Philadelphia.

PLACE OF MEETING,

Supreme Court Room, State Capitol, Harrisburg, unless otherwise ordered.

TIME OF MEETING,

Second Thursday in May, July and November.

Report of the Annual Meeting of the Michigan State Board of Health, at Lansing, April 12, 1892.

THE members present were: Drs. Hazelwood, Vaughan, Gray, Baker, Prof. Fall and Hon. Frank Wells.

The Secretary reported that, during the first quarter of 1892, the reports of outbreaks of dangerous communicable diseases in Michigan were about as usual; action had been taken relative to outbreaks as follows: diphtheria, 125; scarlet fever, 209; typhoid and typho-malarial fever, 53; measles 34. No smallpox during the quarter. Since the close of the quarter one case of typhus in Detroit. Letters and communications on this branch of work were sent out to the number of 1,518. In copying the most important correspondence of the office 1,160 letter-book pages were used. The reporting of dangerous diseases is not, as yet, as perfect as it should be. Of the five diseases mentioned above, nineteen per cent. of all the first notices obtained were from the local columns of newspapers, examined at the office of the State Board of Health; of these, 34 per cent. were afterwards confirmed by the local health officers. To each of the 421 outbreaks, acted upon by the office of the State Board, pamphlets on the restriction and prevention of these diseases were sent to health officers to be distributed to the neighbors of those sick. The compilation of facts gathered from localities relative to the several dangerous diseases has been kept up during the quarter.

Copies of the proceedings of sanitary conventions, and of other publications of the Board have been distributed.

Library accessions during the quarter have consisted of 78 books and pamphlets, and 392 journals. The library now contains 8,161 numbers.

The reports from health officers and clerks of local boards of health are not yet always made; not much more than half of them have reported for the year 1891. A list has been made of all the townships, cities and villages, giving the name and address of each health officer and clerk who has made his annual report as the law requires. To those who have not reported there has been sent a "Second Request for Annual Report required by Law." This has brought in many reports, but some are still delinquent.

The secretary proposed to the Board an amendment to the health laws, so that reports of dangerous diseases which now may be reported to either the health officer, president or clerk of the local board, after the amendment takes effect, shall all be reported to the health officer, he being the officer required by law to act at once. This would increase the completeness and thoroughness of the work by the health officer, and it would make it possible to relieve the clerks of all townships and of most cities and villages from receiving and from making reports on this subject. It would be a welcome relief to over 1,000 officials, and would greatly lessen the work and expenses of the office of the State Board of Health. The State Board approved of the proposed amendment. The Secretary urges the amendmend of the law, and asks the influence of the presidents and clerks of the local boards throughout the State in the same direction.

The usual meteorological work of the office has been kept up. A table of the daily rainfall at Lansing for the thirteen years ending with 1891, was made, by request, and sent for use at the office of the United States Weather Bureau, at Washington. A table of monthly rainfall, for the fourteen years ending with 1890, at Lansing, and for the twenty-eight years ending with 1891, at the Agricultural College, was made and sent by request to U. S. Engineer Schwartz, Grand Rapids.

The work of collecting and compiling sickness statistics has proceeded as usual.

The subject of dangerous contagious diseases at the State Agricultural College, the Reform School, and the State School at Coldwater, was discussed, and a resolution passed requesting the Board's Committee on legislation to formulate some plan for prompt notification to the health authorities immediately on the occurrence of a dangerous communicable disease in any State institution, and for prompt action by the health authorities for the restriction of every dangerous disease in a State institution.

The Secretary mentioned having collected from recent publications, tables, statements and other literature bearing upon the duration of infectiousness of dangerous diseases, especially diphtheria. He has had the material hektographed for convenience of study by members of this Board and others. The material was referred to Prof. Vaughan, who was asked to continue the study of the subject in connection with the Board's pamphlet on diphtheria, with a view to its greater perfection, and to report to the Board at a future time.

The Secretary had received from Saginaw two fishes (bass) containing parasites, the question being whether the parasites were dangerous to health. Prof. Cook of the Agricultural College, kindly examined them and reported: "This is the *cysticercus* stage or encysted form of a tape worm, probably *Bothriocephalus latus*, but we could not tell from this stage. That is the broad tape-worm of man and it works in fish. Such fish should be well cooked."

The Board voted to hold a special meeting at Lansing, June 6th and 7th, when the National Conference of State Boards of Health will meet at Lansing and make a special study of several methods of work by the Michigan State Board of Health.

The prevalence of diphtheria and scarlet fever in Detroit was discussed; comparisons were made with the rest of the State, and with New York City. The Law says "The State Board of Health shall have the general supervision of the interests of the health and life of the citizens of this State." "They shall have authority to send their Secretary, or a committee of the Board, to any part of the State, when deemed necessary to investigate the cause of any special or unusual disease or mortality." A preamble and resolution were adopted as follows:

Whereas, More than one-tenth of the people of Michigan reside in Detroit, and communicable diseases tend to spread from that commercial metropolis to every part of the State, and

Whereas, Some of the dangerous communicable diseases are uncommonly prevalent in Detroit.

Resolved, That a committee, consisting of the president, and four other members of this Board, be appointed to visit Detroit and confer with the health officer and with the Board of Health of Detroit, and with other city officers, if found desirable, with the view of learning and of reporting to this Board, so much as is possible concerning the difficulties under which the Detroit officers are laboring for the restriction and prevention of the dangerous diseases.

Secretary Baker read a review of a table in the last Annual Report of the Health Officer of Detroit, which the Health Officer considered to be evidence "of failure of sulphur disinfection." Secretary Baker recited the results of his study of the table, and concluded that it did not contain any evidence of the failure of disinfection as practiced in Detroit. The thirty-one instances in which diphtheria reappeared in a residence after its disinfection were accounted for by the germs of the disease remaining in the throats or on the persons or clothing of the convalescents. Of the 1,369 cases and 369 deaths, the table does not appear to include a single instance of the reappearance of diphtheria in a residence fumigated after the death of the only or last patient. The germs of diphtheria have been found in human throats two weeks after apparent recovery, and good authorities believe, from facts which cannot well be otherwise explained, that they remain much longer, so that where disinfection occurs at the time of recovery, as is the practice in Detroit, the patient, *unless longer isolated*, may continue to spread the disease. That probably explains the reappearance of diphtheria in Detroit.

The Secretary presented a recent newspaper article which claimed that the kerosene oil which comes from the Ohio wells contains sulphur, arsenic and other noxious constituents which no process of refining could remove. In view of the fact that all such poisons in oils burned go into the air to be breathed, that such oil is used in many places throughout the world and that influenza has been unusually prevalent, any probable cause of irritation of the throat and air-passages should be investigated. Prof. Vaughan was requested to ascertain quantitatively the amount of arsenic in illuminating oils in use in Michigan.

The Secretary presented an account of an explosion of a lamp in Ludington, containing a brand of oil advertised by the Standard Oil Co. as "Eocene." A sample of the oil tested by the closed tester was found to flash at 110° F. and it burned at 115° F.

The Secretary reported having attended a conference of representatives of State and Municipal Boards of Health at Chicago to formulate plans for the exhibit of methods and results of work of boards of health and sanitary officials at the World's Columbian Exposition. The Board directed the Secretary to commence the preparation of graphic diagrams, charts and statements, which will properly represent the methods and results of the work of the Michigan State Board of Health, to include comparisons of death-rates from the principal diseases in Michigan before and since the establishment of the State Board of Health. It is known that such comparisons will show a very great reduction of some of the most dangerous diseases.

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COMMUNICATIONS.

The Sanitary Utilization of Garbage and Refuse, and Destruction of Germ-life in Infected Material, Without Injury to the Article Treated.*

BY I. M. SIMONIN,
Civil Engineer, Philadelphia.

GENTLEMEN :—The criminal, objectionable and unsatisfactory methods now employed in disposing of the garbage and offal of cities, and the primitive means used to prevent the spreading of contagious diseases, by the destruction of the least valuable of the infected material, and the feeble attempts made to disinfect that which seems too valuable to burn, are too well-known to the members of the State Board of Health to be enlarged on by me. The remedy for these evils, we think, is supplied by the process covered by letters patent, granted January 5, 1892, to I. M. Simonin, C. E., and C. F. Simonin, for utilization of offal.

The Simonin Process that it is my pleasure to bring to your attention, has been in operation for over two years, at Providence, and since that time many improvements have been added, and it was not until the same was perfected, both from a sanitary and financial point, that it was thought wise to make the process known to the public. During all this time the Health Officer of that city, Dr. Charles V. Chapin, has promoted the enterprise, both by advice and time, and to him much credit is due.

This process not only disposes of the offal in a sanitary and inoffensive manner, but also effectively destroys the germs of all diseases, without any injury to the material treated, but which on the contrary is improved by the treatment. In case of an epidemic, this apparatus can be controlled by the Health Department, and used to disinfect, thoroughly and effectively, all infected materials. By this process the offal (garbage, dead animals, etc.) is not only treated without rehandling or sorting in a sanitary manner, but the materials are converted into plant-food and grease, both being valuable and necessary for the growth of the country.

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*Read before the Sixth Annual Meeting of the State Board of Health, at Erie, Pa., Wednesday, March 30, 1892.

This plant-food is known to the trade as tankage, and finds a ready sale. The average of the monthly analyses, covering a period of one year, made by Messrs. Stillwell & Gladding, Chemists for the Produce Exchange, New York, shows that the tankage contains 5 per cent. moisture, $4\frac{4}{10}$ per cent. ammonia, 9 per cent. bone phosphate of lime, and one per cent. of potash. The mechanical condition is perfect, and its dryness makes it of much value in the manufacturing of fertilizers, on account of the rapidity with which it will absorb any free acid or moisture present in the material with which it may be mixed. In itself, for many plants, it is a good fertilizer. The grease is used for manufacturing soap, candles, etc. The demand is unlimited, and the price is equal to that of greases of the same color. The industries in which these products are used are only in their infancy, and especially is this the case with the fertilizing trade. The demand for fertilizers is constantly increasing, and the sources of crude material do not increase in the same ratio.

The Quarterly Journal of Science says: "To economise nitrogen, potash, and phosphorus—to recover these from waste—is the sacred task which chemists and engineers should take in hand. The reforms which shield us from pestilence, sink into insignificance compared with those required to guard posterity, in not a very remote future, from chronic scarcity."

The crops that a soil will produce are only limited in number by the amount of plant-food, water, and temperature we supply it. The farms surrounding Paris produce from five to ten crops a year, and every crop many folds larger than that obtained from the most fertile soil in this country. To-day in Massachusetts alone, 906 farms are abandoned, each farm averaging 85 acres, and containing all necessary buildings for the comfort of man and beast. It will only be a short time before all the States will be suffering from the same trouble. The fertilizing material produced by this process contains every ingredient needed by plants, and if the offal of all cities was so utilized, plant-food would be so abundant and cheap that it would be within the reach of every farmer. Barren soils would soon be rich and fertile, waste places transformed into spots beautiful to the eye, and what was desolate and abandoned would be reclaimed and productive of much value.

The Simonin Process is simple and entirely a chemical one. Garbage is a mixture of water, and animal and vegetable matter. The percentage of water being about 80, and any attempt to remove this by drying before the treatment, would be fatal to the commercial success of the process, and besides would prevent its use as a sanitary measure. To deprive it of its water in a cheap and sanitary manner, we enclose as soon as received the offal in a large cylinder, tested to stand 150 pounds pressure. It is in this cylinder, completely immersed in a chemical re-agent, with which water will not mix, and which at the same time kills all germs of disease, and in addition acts as a solvent for grease, heat being used in the operation.

The specific gravity of the water being heavier than that of the re-agent, a large part of the water is accordingly displaced, and the balance passes off with the vapor of the re-agent and is condensed and separated therefrom. A series of these immersions causes not only a complete drying of the offal, but frees it entirely of grease.

The expense to cities or towns using this system would be less than cremation, and it can be introduced profitably in towns producing as low as five tons of refuse daily. It is estimated that this amount is produced by ten to fifteen thousand people.

I append to this paper a report on the Simonin Process, made January 27, 1892, by Dr. J. W. Prendergast, to the Board of Legislation of Cincinnati, O., he having been delegated by the city to examine all known processes in use in this country for the treatment of garbage. His report covers the work for the utilization of offal, but questioning the claims that liquid hydro-carbon—the re-agent used in this process—destroys germ life, especially if used cold, he had a number of tests made under his personal supervision in his Bacterial Department, and his report on the same justifies our claim. That there is need of a better sterilizer than that now in common use is not open to dispute, hot air not being able to be supplied at a sufficiently high temperature without injury to the material treated, to kill all germ life. It is the hidden germ, or the germ we cannot control, that causes pestilence and epidemics. Cremation, while effective in destroying germ life, still is liable to permit the escape of germs before the heat is sufficiently high to destroy this life. The mass treated must first be heated, then subject to destructive distillation, and finally ignited. The moisture and gases that escape must carry germs with them, the most improved crematories being open to this objection, for the draft cannot be obstructed, consequently the vapors cannot be controlled. To obtain an ideal process, all parts of the infected material must be acted on the same, and this can only be done by means of an agent that will penetrate all portions of the material. This, we claim, is accomplished by the use of hydro-carbon, either in the liquid or vapor state. It is an exceptional case when neither of these cannot be used; and in this case we have connected with the same apparatus steam, which can be used, either by means of coils to heat the air within the cylinders, or it can be used as live steam, and, by means of valves, the heat and pressure kept under perfect control. The hydro-carbon used in the process is recovered, consequently the expense is nominal.

All of which is respectfully submitted.

APPENDIX A.

HEALTH DEPARTMENT.

OFFICE OF SUPERINTENDENT OF HEALTH,
CITY HALL, PROVIDENCE, R. I., *August 13, 1891.*

The Simonin Process for Utilization of Garbage has been adopted by this city, and it receives the unqualified approval of the Health Department.

(Signed) CHARLES V. CHAPIN, M. D., *Supt.*

APPENDIX B.

REPORT OF DR. J. W. PRENDERGAST.

THE SIMONIN PROCESS FOR THE DISPOSAL OF GARBAGE,

CINCINNATI, *February 23, 1892.*

To the Honorable Board of Administration.

GENTLEMEN:—In compliance with your instructions I have visited the City of Providence, Rhode Island, for the purpose of personally inspecting and investigating the process in use in that city for the disposal of garbage, and beg leave to submit herewith the following report:

Leaving here on the evening of February 5th and arriving at Providence on the morning of the 7th inst., I proceeded without delay to the garbage plant. It is located about ten minutes' walk from the centre and rather to one side of the city.

Before entering I walked in every direction around the building to discover if there was any offensive odor proceeding from it, and I assure you that did I not know the nature of the business conducted therein I certainly should have been unable to distinguish from the sense of smell anything concerning the character of trade.

The process has been in operation in the City of Providence for over two years. Improvements were being made constantly under the supervision of Dr. Chapin, the Health Officer of Providence, and it was not until January 5th of the present year, the day the patents were allowed, that the inventors felt they were ready to invite the world to inspect and examine the product of their genius.

The first impression was an entirely pleasant and agreeable one, for the reason that there was an entire absence of any disagreeable odor whatsoever in or around the plant.

The process is simple and entirely chemical, and one wonders that the well-known principles applied here had not been thought of before.

It is difficult, without a diagram, to make lucid anything concerning machinery, but an effort will be made to briefly outline the principal features of this process:

Two large buildings are used, one for the machinery used in the utilization of the garbage, consisting of large iron retorts, vaporizers, condensers, settlers, purifiers, etc., and the other building is used as a power-house and storage wareroom.

The garbage, on arrival at the works, is immediately placed on small truck cars, built expressly for the purpose, and without any handling or assorting of the mass whatever, is at once run into these large iron retorts referred to above.

These retorts are immense iron cylinders, 18 feet long and 6 feet in diameter, and accommodate three cars. On the floor of each retort is a series of steam pipes and at the opposite end is a valve which permits the entrance of the chemical re-agent. At the top of each retort are numerous ingenious devices employed in vaporization. As soon as three cars are run into the retort the open end is hermetically sealed, thus preventing the escape of any odors or gases.

The object of the invention is a twofold one: first, to provide a commercially successful apparatus whereby garbage can be treated for the purpose of recovering from it the constituents which have a market value, and second, to effect this result without occasioning a nuisance and in a perfectly sanitary manner.

The chemical re-agent used has a less specific gravity than water and also has a solvent effect upon grease or fat submitted to its action.

Now the retort is closed and filled with garbage. The re-agent is then allowed to fill the retort and it has the double effect of dissolving the grease and displacing the water in the garbage. The mass is treated in this manner several times without removing it from the retort or even opening the end of the retort. It has the final effect of completely drying the garbage, and I have in my office samples of both vegetable and animal matter treated in this manner, at Providence, under my own supervision.

Two products are derived from the treatment of garbage by this process, namely: first, what appears to be a valuable fertilizing matter and a grease which I am informed meets with a ready sale. There are various condensers, settlers, re-agent-holders, purifiers, vaporizers, etc., used in the process, which, it seems to me, do not need any detailed description.

Such, in brief, is the Simonin Process and Apparatus for treating Garbage.

Dr. Chapin, the Health Officer of Providence, who is familiar with every step of the process, and who, perhaps, has given as much time to the study of the garbage question as any other gentleman in the United States, unqualifiedly endorses this process.

Massachusetts being the recognized leader in sanitary matters, and Boston, the seat of culture, being but an hour's ride, I felt it incumbent upon me to ascertain what her officials thought of this latest garbage process.

Dr. Durgin, of the Department of Health, while he feels that every householder should dispose of his own garbage, unhesitatingly recommends this method as the next best process.

Mr. Chas. Carter, a Civil Engineer and Boston's Superintendent of Street Cleaning, also endorses it highly, and makes special mention of it in his annual report, which is just from the press.

Respectfully submitted,
J. W. Prendergast,
Health Officer.

APPENDIX C.

DEPARTMENT OF HEALTH.

Bureau of Bacteriology and Microscopy.

Cincinnati, *March 15, 1892.*

J. W. Prendergast, M.D., *Health Officer.*

Dear Sir:—Permit me, herewith, to submit, in compliance with your instructions, the following report concerning the germicidal action of naphtha.

My observations have been limited to the practical aspects of the question, both so far as the microscopic investigations are concerned, as well as the references to the literature of the subject.

In testing the germicidal action of naphtha I experimented with the more common forms of microscopic vegetable life which give rise to the process of putrefaction or are generated as products of this process.

It has long been held that all, or nearly all, of the coal-tar derivatives possess some disinfectant or germicidal properties. Among these chemical agents naphtha is said to have a specially high degree of bacteriocidal action. In testing the power of naphtha to destroy microscopic vegetable life, I selected putrefying substances which are most frequently found in the offal or garbage of the city, such as particles of meat, bone, potatoes, fruit of various kinds, peakings, rags, etc. Since moisture or the presence of a small percentage of water is a condition favorable to the generation and development of the microscopic elements of decomposition, putrefaction or fermentation, I also subjected some of the fungi found in stagnant water to the action of naphtha.

I. The different kinds of mould fungi, found upon moist cellar-walls, etc., seem to be quite susceptible to the action of naphtha. I succeeded in completely stopping the growth of these fungi by exposure to naphtha. In referring to the literature upon the subject, I found a statement by Klebs, to the effect that the odor of certain coal-tar products will lower the multiplying power of the cells of the mould-fungi.

II. A particle of flesh in the incipient stage of putrefaction was found to serve as a culture-soil for at least three distinct kinds of vegetable organisms. Spiral-shaped fungi were seen in great number. Bundles and networks of them could easily be recognized. Besides these the microscope revealed some rod-shaped fungi and clusters of nucleated fungus cells. The specimen was exposed to the action of naphtha and microscopic examination after the lapse of thirty-six (36) hours showed complete cessation of the fungus process. Besides the interruption of microscopic plant-life, there were evident destructive changes in the muscular structure of the specimen, due to the powerful action of the naphtha.

III. A piece of meat, in a state of advanced decomposition, was found to contain numerous forms of fungus vegetations. Some of these were identical with the organisms found in the preceding specimen. Besides these many new forms were seen.

Naphtha interrupts the growth of these fungi immediately. Some of the spiral-shaped organisms continued to grow for days after the exposure to naphtha, but finally there was entire absence of vegetable life in the specimen.

IV. Organic matter, deposited in moist places, which are practically inaccessible to light and air, will in the course of time, be found to be covered with a layer of dust, soot and mould. Under the microscope this layer presents many varieties of plant-life. Many of these fungi multiply with astonishing rapidity and can easily be cultivated upon suitable soil. Their vitality, or resisting power, however, seems to be in inverse ratio to their prolificacy. They are affected by light and atmospheric changes The action of naphtha is very decided in interrupting their growth and ultimately destroying them.

V. Stagnant water contains many forms of microscopic fungi. Some of these belong to the class of "spirilla" and present many varieties of shape. They are of importance to bacteriological science, because specific pathogenic action is attributed to some of them. The best known and most malignant, if left to itself, is the typhoid bacillus. Not being able to obtain a pure culture of this germ, I contented myself with the statement of some German and American observers (among them Hare of Philadelphia), in regard to the action of naphtha upon the bacillus typhosus. According to these investigators naphtha is positively antagonistic to the development of this germ and kills it as readily as does a 100 per cent. solution of bichloride of mercury. As far as other germs contained in stagnant water are concerned, naphtha stops their growth promptly and destroys them, as can readily be seen under the microscope.

From what has been said there can be no doubt that naphtha possesses marked germicidal power. What forms of microscopic fungi are particularly affected by it and how naphtha compares in this respect with other germicidal agents, only careful and systematic experiences can show. But in order to furnish a basis upon which to establish the hygienic value of naphtha in connection with the garbage question it is not necessary to experiment with pure cultures. I have, therefore, confined myself to the microscopic examination of mixed specimens, obtained from garbage, and can, after numerous experiments with mixed specimens and observations of the action of naphtha upon them, answer the question as to the germicidal properties of naphtha in the affirmative.

Experiments all conducted with cold naphtha.

Respectfully submitted,
OTTO JUETTNER, M. D.,
Bacteriologist to Department of Health.

Is Typhoid Fever a Rural Disease?*

BY DANIEL B. D. BEAVER, M.D.,
Of Reading, Pa.

IN the discussion of this question before a lay audience it may be well to take a retrospective glance at the development of the knowledge regarding it, which is now in the possession of the medical profession.

The first observations which pointed the way to the belief that this disease was due to a material, tangible and visible cause, were made about thirty years ago. There were reported then local eruptions of the disease in small villages in this country and Europe, in which the cause was traced to a single well, by observing that all the persons affected by it obtained therefrom their supply of water. Such observations accumulated rapidly, and were made with so much care to exclude error, that in a short time the profession was in possession of an array of incontrovertible evidence that impure water is one of the most common sources of the disease. Some years later outbreaks of the disease in cities were traced in like manner to certain dairies, by observing that its ravages were confined closely to the routes of particular milkmen, following them in their sinuous courses, striking a family here and there, and then skipping a few houses or as many blocks, to turn up with them again.

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* Read before the State Sanitary Convention at Erie, Pa.

By that time there was firmly established the belief that typhoid fever was due to some material cause which was transportable in water and milk, but we had no definite idea of the character of this morbid material, until some years thereafter, when the bacteriologist demonstrated it to be a living microbe—a low form of vegetable life, which, however, has as distinct, separate and independent an existence as a grape-vine, and, like it, can be seen, touched and cultivated.

Now, then, believing that the entrance of this living microbe into the human body is the cause of typhoid fever, we are ready to discuss the question as to whether or not this is a rural disease. By a rural disease is meant a disease of which the cause is primarily found more frequently in the rural districts than in cities, and which could not arise in cities if its cause did not preexist in the country.

Observations extending over a period of fifteen years have convinced me that typhoid fever is a rural disease.

In an investigation of the comparative frequency of this disease in the city of Reading and the surrounding country during the year 1889, I found the proportion of cases to residents in the city 1 to 246, and in the country 1 to 129—the proportion in the country being nearly double that of the city.

This difference is too great to be due to accidental circumstances. There are permanent conditions which give rise to it, and they are visible to any one who wishes to look for them, and undoubtedly exist in other localities as well as here.

In all the severe endemics of this disease in cities and towns of late years, which were investigated, it was shown most conclusively that the poison was imbibed by the victims with their drinking water, and that the water became polluted directly by the discharges from the bowels of persons ill with the disease. In the larger towns and cities this source of infection is altogether absent, because the supply of water comes from some outlying district through pipes, thus making it impossible for careless or ignorant residents to contaminate it with the stools of sick persons. The contamination must occur before the water reaches the supply-pipes, and in the rural district drained by the streams which furnish it.

Much has been said of late years about bad plumbing as a cause of this disease in cities, and it is questionable whether the plumbers have not been blamed innocently for many cases which, by more thorough investigation, might have been shown to be owing to other causes. In houses connected with a common city sewer there may be some danger of infection from the sewer, but it must be very small, unless the grossest negligence is practiced by the occupants, because the pipes connecting buildings with sewers are always moist and therefore in good condition to hold microbes or moulds that may be growing on their surfaces, and prevent them being carried upward with escaping gas or air. It is well known, of course, that currents of air of sufficient dryness to dessicate the surface over which they pass will carry along loose bacteria and other small particles of matter, but it is not probable that the moist air of a sewer-pipe moves with the velocity necessary to detach moist and adherent growths from its surface. At all events, a properly flushed, filled and cleaned bowl in a water-closet should be, and probably is, an impassable barrier to the low forms of life in the pipes below it.

In Reading there are no common sewers. The houses with baths and indoor closets discharge their sewage into wells in the yards, which are required to be not less than twenty feet deep.

The surface soil, to a depth of ten to thirty feet, is sandy and porous, carrying off water and solid material in solution so quickly that most cesspools fill very slowly and require to be emptied only once in many years. This being so, there must be many wells in this city which have received and now contain the excretions of persons sick with typhoid fever, and yet the houses connected with these wells by pipes presented less than one-half as much typhoid disease in 1889 as the houses with no indoor closets and baths, and no connection with the cesspools.

Furthermore, a large percentage of the cases which occurred in houses with baths and closets were in recently built houses, of which the diseased persons were the first occupants. The cesspools in these cases could then not be regarded as the source of infection, unless they were shown to be breeding places for such typhoid microbes as might enter them with the outside atmosphere.

It is not improbable that a microbe which attacks the human body only through that part of the intestine in which the contents already possess the characteristics of evacuated fecal matter, might find masses of human excrement suitable to development and multiplication; but then the production of these microbes should be vastly greater in the country than in cities.

Then again, this microbe, unlike the tubercle bacillus, is rarely found in the air and dust in cities, because it is not, like it, cast upon the streets, but thrown underground in wells or sewers, where it is out of reach of currents of dry air.

If, then, the air and water can be excluded from the sources of infection in cities, there remains but one other, and that is the food-supply. In regard to this, it may be said in favor of the country, that city and country are dependent upon each other for sustenance, but a moment's reflection will show that they exchange entirely different kinds of food—otherwise there would be no necessity for the exchange.

The articles which are taken from the city to the country are produced, almost without exception, by chemical action, or in their manufacture exposed to degrees of heat that would be fatal to any form of life. On the contrary, the articles which the city receives from the country are produced without the aid of destructive heat or chemical action—such as milk, butter, cheese and the vegetables which are eaten uncooked. Most of these articles are contaminated by water in which they, or the utensils in which they are made, are washed; but vegetables may also bear the poison directly from the soil in which they have been grown, especially if the soil has been fertilized by the use of the contents of cesspools. Indeed, Dr. C. M. Cresson, of Philadelphia, whose ability as a microscopist is unquestioned, informs me that he found the typhoid microbe on celery stalks, in the fissures between the leaves. One well-authenticated observation like this should condemn the use of night-soil as a fertilizer, and dissuade every intelligent farmer from using it.

Aside from the few instances of direct contamination of vegetables by the soil, water is then the medium through which the typhoid virus is disseminated, whether it enters the body of its victims with food or drink; and the pollution of the water occurs at its fountain in the spring or well on the farm.

Springs are generally located, and wells dug, in low ground, and the farm buildings arranged conveniently around them. Usually the house and barn are nearest the water, and the other outbuildings and privy some distance away, and almost invariably the latter are on higher ground. The drainage then is from the privy toward the water; and in sandy or shale subsoil, which is very porous, there can be only one result—pollution of the water by the contents of the privy. Now, if a case of typhoid appears on such a farm, what will follow? The fecal discharges of the invalid, which are loaded with fever microbes, more than all the other excretions from his body, are thrown into the privy. The sick one may get well; and the rest of the family escape the disease for the present, ignorant of the fate that awaits them. The poison is already in the cup and need only be taken.

With the next season, or possibly after the next heavy rainfall, one member after another takes the bed, until the whole family have been down with the disease.

This has occurred repeatedly in my experience. I recall now one instance in which every one in a family of nine persons was laid up with the disease.

After communication between a typhoid-infected cesspool and the water-fountain on a farm has been established, there is no telling how long it may be a source of illness. It is possible, as has been already said, that the cesspool may be a breeding-ground for the microbes, and that they may reproduce themselves there for years, or the occupants of the house may change often, so that at short intervals broods of humanized, and possibly more highly vitalized, microbes are repeatedly added to the old stock. There are, undoubtedly, many farms in this State which send to market crops of typhoid microbes as regularly as butter and cheese.

Several such fever-farms were reported to me from this county in 1889, but the one most distinguished in this respect came under my notice some years ago in an adjoining county. While riding with a physican on his way to see a patient he pointed to a farmhouse which he said had a strange history. He had practiced medicine in the adjacent village thirty years. The farm was occupied by tenants who were changed every few years, and during these thirty years every family that lived on the place passed through this disease. Could the products of this farm have been followed to their destination through this long time, might not terrible tales of woe have been unfolded?

How many dwellers in cities, who consumed the products of this farm kitchen, were doomed thereby to an undeserved sickbed and, perhaps, a premature grave?

If the time allotted to this paper would permit it, more facts might be presented in support of the theory that typhoid fever is a rural disease, under the definition I have given; but as the object is to awaken interest in the subject rather than to prove anything conclusively, enough has probably been said. To those who look with favor upon this theory it will be apparent that it behooves us all, whether we are residents of city or country, to bring to the attention of those in authority in the State, and the people in the rural districts, the danger which threatens them and us through the ignorance of the cause and manner of the spread of this formidable disease, on the part of the class who are in charge of the very fountains of our common food and water-supply.

Trichinosis; with Report of Cases.

A Plea for the Obligatory Examination of Meats under the Supervision of a National Department of Public Health.*

BY MURRAY GALT MOLLER, A.M., B.S., M.D.,
Lancaster, Pa.

WHEN, last Tuesday evening, the Hon. S. T. Davis, M.D., an active and efficient member of the State Board of Health, requested me to read a paper before this convention, it occurred to us both, that I could, perhaps, choose no subject of more general and immediate interest than that of Trichinosis. Before speaking of an instructive series of cases that engaged the attention of the medical faculty in Lancaster, during the past winter, allow me to dwell, for a moment, upon the history of this disease.

In 1833 Hilton recognized in muscular tissue small, calcified capsules—little envelopes, formed in the sarcolemma or elastic sheath surrounding the muscle fibres—filled with a deposit of lime salt, but he mistook them for cysticerci, to which we will refer later. In 1834 Paget, while a student, discovered that these capsules contained a round worm, which was in the following year, named by Owen *Trichina Spiralis*, from the peculiar and characteristic spiral form which the worm was found to assume. Up to this time the source of the parasite was unknown, but in 1846 the late Joseph Leidy, just two years after his graduation from the University of Pennsylvania, and when he was but twenty-three years old, made the discovery which had escaped these eminent investigators on the other side of the ocean. One day, as he was about making a ham sandwich, he noticed a number of small white dots, no bigger than a pin-point, scattered over the meat; these, under the microscope, he discovered to be identical with the trichinæ spirales described by Owen, and which he had frequently seen in his dissections of human muscles. To this discovery, as much as to anything else, was due the expulsion of the "American hog" from Germany. In 1850 Herbst succeeded in raising the larvæ by feeding trichinous meat to dogs. The following year Luschka recognized the finer end of the worm as the head; and, in 1859, the adult worm was studied by Virchow. In 1860 "Leuckart, of Giesen, having the German savants' advantage of a *corpus vile experimentum fieri*, fed trichinous pork to condemned criminals and, by a post-mortem examination, confirmed Leidy's theory." Hitherto the parasite had been looked upon simply as a curiosity; with one exception, all had unanimously considered them innocuous, and some had positively affirmed that they produced no disturbance whatever. Wood, however, had, in 1835, propounded the question whether a case of severe rheumatism, observed by him, might not possibly be connected with the trichinæ found. This terrible misapprehension was rectified by Zeuker, in his study of a single case, admitted to the Dresden Hospital, on January 11, 1860, as a case of typhus.

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* Read before the Pennsylvania State Sanitary Convention, Erie, Pa., March 29, 1892.

"The theory of trichinosis had, then, in its essential points reached the following form: Man becomes affected with trichinæ by the use of trichinous pork. The *muscle trichinæ*, in the stomach, become freed from their capsules and developed, in the intestines, to mature, sexual worms, *intestinal trichinæ*, which attain their full growth at the end of about seven days and give birth to living young. These young trichinæ migrate directly from the intestine in which they are situated into the muscles of the same individual; since during their migration they are found in the mesenteric glands, abdominal cavity and pericardium. They penetrate into the interior of the muscular fibres and cause the destruction of the contractile substance; here they grow to perfect *muscle* trichinæ. These migratory processes bring about, in a man, a severe febrile disease—trichnosis—which may result in death, both in man or beast. Cases of encapsulated trichinosis, are to be considered as healed cases of trichinosis." The various steps by which this theory was built up, rests principally upon the investigations of Leuckart, Virchow and Zeuker, who worked independently and in part almost simultaneously upon specimens from Zeuker's case.

Probably the oldest epidemic known, with more or less certainty, to be authentic, is one which occurred in Wurtemburg, in 1675, in the family of a miserable farmer. The father and his son died; all the remaining inmates of the house who had partaken of the meat were taken ill. A number of epidemics were noted and studied after Hilton's discovery in 1833. Especially interesting was that in Wegleben, near Quedlinburg, in 1849-50, which was subsequently recognized. It was designated at the time as "English Sweat," or "black death." How many trichinæ epidemics were buried under this pseudonym, only a careful study of reports can ever divulge. These reports have come from all over the world; according to an oral report, by Cobbold, trichinosis was diagnosed for the first time in England, in Northumberland, in 1871. So much then for the history of the disease.

The trichina spiralis, one of the class of round worms or nematoda, is met with, as we have seen, under two forms, the intestinal trichina and the muscle trichina. The adult, sexually mature trichina (the intestinal form) is an extremely fine, round, thread-like, slightly coiled, worm, with a still finer head, which gradually decreases in thickness towards its point; its hinder extremity is rounded off rather abruptly, the chitinous integument is slightly annulated. The males attain the length of a millimetre and a half, and are furnished, at the caudal extremity with two, pointless, lobular appendages, and a genital opening which, together with the end of the rectum, forms an outlet directed forwards. The internal sexual organs are already complete even in the muscle-trichinæ. The females are from three to four millimetres long; their genital opening is situated about at the junction of the first and second quarters of the whole length of the body. Only a part of the internal sexual organs of the female are present in the muscle-trichinæ, and a part are formed during its sojourn in the intestine. The embryos of the eggs develop in the uterus and are born from one end of it free—and living. The birth of the embryos begins on the seventh day after the introduction of the muscle-trichinæ into the stomach, and it may continue, as it appears, for weeks. Yet, a repeated maturation of eggs, as it were, in crops, seems now and then to occur. The embryos do not long remain in the intestine, but soon migrate to settle in the voluntary muscles. In about fourteen days the muscle-trichinæ attain the greatest size ever reached by the parasite while in that state; they attain a length of from 0.7 to 1.0 millimetres, and they usually lie singly or, more rarely, in two, three or even four in one capsule. Their digestive canal and the sexual apparatus, although the latter is not yet fully developed, are distinctly visible, as intestinal-trichinæ the intruders have a very limited duration of life. They very rarely live longer than from five to eight weeks. Observations of a longer existence may be explained on the supposition of a repeated importation. The muscle-trichinæ have a much greater tenacity of life; their vitality is almost unlimited and frequently ends only after the death of the person affected. In some cases they have been found living even after the lapse of decades. After a short time a deposition of lime salts, especially of carbonate of lime, usually takes place in the capsules; this causes it to become cloudy and opaque and, after a time, the trichina is entirely hidden. The capsules then become evident to the naked eye as small white dots or streaks, while, previous to the calcification, they were visible only to experienced observers. This condition in pork is to be distinguished from that known as "measly pork," which is due to the presence of the cysticerci of the *tænia solium*, the ordinary, long, intestinal tape-worm, which, compared with the *trichina spiralis*, is as the leviathan to the water-shark. If then the capsulated muscle-trichinæ be introduced into the stomach of a proper animal, they will be freed from their capsules, become sexually mature within a few (usually two and a half) days, copulate and the females will bring forth living young after five days, *i.e.*, seven days after their importation. In addition to men and swine, the trichina has been found in the cat, rat, mouse, marmot, pole-cat, fox, marten badger, hedgehog, raccoon and bear. By feeding them experimentally the trichinæ have been successfully bred in rabbits, guinea-pigs, sheep, calves and dogs. In the three latter animals, however, the experiments seem to have been only exceptionally successful. As a rule, the formation of the intestinal trichinæ is the full extent of the infection in dogs.

Trichinosis generally begins with symptoms of more or less gastro-intestinal disorder, such as a sense of pressure and fullness in the epigastrium, impaired appetite, discomfort after eating, nausea or vomiting, eructations, colicky pains and diarrhœa, with a feeling of much languor and depression; in some cases the onset is characterized by violent sickness and purging, simulating cholera or irritant poisoning. Occasionally the disease sets in quite insidiously, with merely a feeling of lassitude and depression, wandering pains and stiffness in the limbs. The subsequent characteristic symptoms are those dependent upon the condition of the muscles. Those of the limbs which are affected become painful, tender, swollen, hard and rigid; there is much stiffness, movement being greatly impaired, and the joints are fixed in a state of more or less flexion, any attempt to extend them causing severe pain. From the complication of various muscles there may result attacks of severe dyspnœa, aphonia, trismus, dysphagia, impaired movements of the tongue and other symptoms. A peculiar œdema is also observed, affecting the face and eyelids, and extending in the limbs from the upper part towards the hands and feet. Symptomatic pyrexia accompanies this condition, often severe; the temperature sometimes rising to 106° and the pulse to 120 or 140; abundant clammy perspiration may be observed and occasionally sudamina appear. In cases tending towards a fatal issue, low typhoid symptoms set in, frequently accompanied with signs of bronchitis, pneumonia and other inflammatory affections. Should recovery ensue, the muscular symptoms gradually subside, as well as the pyrexia; but convalescence is usually protracted, marked debility, anæmia and œdema remaining for some time. To illustrate this I report a series of cases which occurred in the practice of a brother practitioner, and which I saw with him about the middle of December. On Thanksgiving day, November 26, 1891, Martin K. R. purchased from his butcher a dressed hog, which he and his family immediately proceeded to cut up into sausage-meat, hams, spare-ribs, etc. For several weeks they ate no other meat, but about the first of December Martin and his wife and their eight children became ill. Edna, æt. 8, Stella, æt. 12, and John, æt. 16, went to bed and soon developed alarming symptoms. The correct diagnosis was soon made, and unfortunately was absolutely confirmed by the autopsy, which I made upon the remains of Edna, who died December 20th, and whose muscles were found to be simply swarming with living trichinæ. Stella lingered and suffered until February 5, 1892, when she died, as did her little sister, from evident respiratory failure, due to the encroachments of the parasites upon the muscles of respiration. John is on the slow road to recovery. These cases are noteworthy, in that children, as a rule, escape. These three children presented typical casts of profound infection; the other members of the family and two neighbors, who had partaken of their sausage, were not very seriously affected, though they gave positive signs of a certain degree of infection.

Of all the ills that flesh is heir to, the treatment of few is as hopeless as in trichinosis. The ultimate issue seems to depend almost wholly upon the number of trichinæ ingested; this in time depends upon the number of trichinæ in the meat used and the amount of the latter and upon the mode of its preparation. The disease is so seldom recognized as such in the early stage, when above measures looking to the complete evacuation of the digestive tract and the removal of the cause would be of avail. Castor oil or other aperients, glycerine, which by its peculiar hygroscopic properties acts directly upon the integument of the worm, and of the newer remedy, ithymol, salicylic acid, oil of chabrite and kamala are to be tried. Merrill strongly recommends arsenic. McCalla reports four cases cured by the use of salicylic acid and antipyrin—the latter drug relieving almost immediately the horrible pains. The general treatment must be of a supporting character—quinine and stimulants being also administered. Other symptoms and complications must be treated as they arise. Realizing, then, the difficulties which beset the therapeutic treatment of these cases, which are in such large proportion fatal, it behooves us to turn our attention to the prophylaxis of the disease. In this country our pork is trichinous to the extent of two and a half per cent. while in Germany it is but one-tenth of one per cent. We might, of course, take "Paddy's" advice and when we eat pork, eat beef instead! so escaping all possibility of infection, for it is from swine preeminently and directly that man is infected with trichinæ. We may remark parenthetically, that there would indeed be danger of "jumping out of the frying-pan into the fire" by substituting tuberculous beef for trichinous pork; then indeed would the "last state of that man be worse than the first!" Next, all can insist, if all must eat pork, upon its having been well pickled and smoked, and, above all, most thoroughly cooked. The pickling and smoking, contrary to some of the older authorities, do not seem sufficient to destroy the parasite, though recent experiments promise some progress in this direction. Of the different methods of cooking, boiling is the most effective, frying and roasting the least so; and the boiling temperature should be maintained, for a length of time sufficient to insure the thorough heating of the interior of the piece of meat in course of preparation. The third, last and most important of all prophylactic measures is:

GOVERNMENT INSPECTION OF MEATS.

It is this part of the paper which especially concerns us as sanitarians and to this question I ask your especial attention. At the opening exercises of the Institute of Hygiene of the University of Pennsylvania, held on the 22d of last month, the "day of the immortal cherry tree," Dr. Benjamin Lee, the able

Secretary of our State Board of Health, delivered a noteworthy address. He began with a serio-comic satire on the advantages of life in this "land of the free and home of the brave" as compared with that in the bureaucratic countries of the old world, whose inhabitants groan under the iron heel of despotism. He says: "The tyrannical rulers of those down-trodden peoples actually presume to interfere with their meats and drinks, forbidding them to quench their thirst with water enriched by the sewage of cities, hallowed by the infusion of the remains of their dear ancestors, or delicately tinted with the drainage of coal mines; or to refresh themselves with beer rendered aromatic and enlivening by cocculus dudicus and strychnine; or wine manufactured from the juicy apple and the generous turnip, or tea composed of rotten leaves and catechu and colored with verdegris; or coffee innocent of Java and Mocha, or chocolate in which the offensive cocoa butter has been replaced with tallow. They are not permitted to eat the flesh of tuberculous cattle and trichinous swine, while we are freely allowed to feast on those which have been *condemned for their markets!*"

This is an actual fact, our great American Government affords almost absolute indemnity to the foreign consumers of our large pork shipments, while there is no law to prevent the meat, which has been condemned for the export trade, from being turned into our home markets. It is true that this State provides that animals affected by contagious diseases may be quarantined and if necessary killed, but for our present purpose this law is ineffective and somewhat in the manner of "locking the stable after the horse is stolen." To illustrate the thoroughness with which this matter is dealt in Germany, the order of the Minister of the Interior, issued July 21, 1889, regarding the method in which the obligatory examination of pork shall be carried on, for the prevention of trichinosis, contains fourteen sections, concerning the regulation of record-books, character of microscopes to be used, appointment and pay of examiners, etc. The examination of each hog must include six pieces of flesh as follows: (1) from the columns of the diaphragm; (2) from the muscles of the diaphragm; (3) from the lumbar or laryngeal muscles; (4) from the abdominal muscles; (5) from the intercostal muscles; (6) from the tongue muscles. From each of these six pieces of flesh, at least six preparations, must be made, in the form of longitudinal sections, one centimetre long by one-half centimetre broad, and thin enough for investigation. In the examination of ham and sausages, these pieces of flesh are to be taken from different parts, and from each at least four preparations made. The tests of pork and meat should be made in the region of bones and tendons. Each trichina examiner is limited to the examination of ten hogs in one day. The ordinance took effect September 1st, 1889. As compared with this, mark the wholly inadequate provisions of the Act of our own Congress, approved March 3, 1891. "The inspector will take from each hog *two* samples of muscles, one from the 'pillar of the diaphragm' and the other—from another part of the body!"

The passage of this Act, and the subsequent readmission of American pork into Germany was hailed with great delight—more particularly on the part of American pork-packers and shippers.

The French revenue expert sent to inquire into the system of American Inspection of pork, publicly states that the system of Secretary Rusk is perfect, and that "it is neither possible nor advantageous for anybody to pack or export a single American hog that has not undergone microscopic examination."

It requires but little consideration of the subject to see wherein our regulations fall far short of our needs. In the first place, the act, above referred to, has to do principally with meats intended "for export to foreign countries," and no vessel with such a cargo can be cleared until she shows the certificate of the government inspectors. So far, so good, and if it pleases our friends on the other side of the water, so much the better. There is, then, a provision for the inspector, "*prior to their slaughter*, of all cattle, sheep and hogs which are the subjects of Interstate Commerce, and in addition to the aforesaid inspection, they may be made in all cases when the Secretary of Agriculture may deem it necessary or expedient, under the rules of regulations to be by him prescribed, a post-mortem examination of the carcasses of all cattle, etc., subjects of Interstate Commerce." That is I suppose, Secretary Rusk, upon hearing that half a dozen people had *died* from trichinosis, in Erie or Lancaster, might order an inspection of meat of that city! It is even unlawful for John Smith of Pennsylvania to sell his trichinous swine to Thomas Jones of New York; but John Smith of Erie may ship all his trichinous meat to William Roberts of Lancaster and be paid for the same in the coin of the realm, yea, even in seventy-cent dollars. A number of the largest and wealthiest of the pork-packing establishments are now equipped with microscopical laboratories, and microscopists, for the whole of which outfit "Uncle Sam," through "Uncle Jerry," generously foots the bills. Do not misunderstand me as decrying the efforts made on the part of our National Government in any of the lines of scientific investigation. The bare mention of our National Board of Health, short-lived as it was; the names of Sternberg and Shakespeare, whose investigations into yellow fever and cholera reflected credit alike upon themselves, their profession and the government whose especial commissions they held for the purpose; the record of the Army Medical Library and Museum and of the Marine Hospital service, and even of the recently organized Department of Agriculture, are all subjects for our congratulation. This is an age of progress and of investigation and education, in evidence of which we are gathered here to make counsel together concerning the sanitary problems which confront us. How, then, may we best take advantage of this *Zeitgeist*, that intangible and at times unrecognized force, which is, according to Bryce, the salvation of "The American Commonwealth." It is needless to speak here of the significance and importance of modern preventive medicine. A single glance at the report of any board of health shows the terrible difference in the mortality lists of those preventable diseases which are still, owing to the ignorance or indifference of the general public, beyond the control of the sanitary scientist, and those which, like smallpox, he has practically eradicated. How shall the general public be lead to know its necessities in this line and to demand their abatement? Last summer, at the forty-second annual meeting of the American Medical Association, a resolution was passed authorizing a committee to memorialize Congress for the establishment of a National Department of Public Health, with a cabinet officer to be known as the Secretary of Public Health. On the 10th of December last such a bill was introduced by Senator Sherman and has already engaged the favorable consideration of a number of his colleagues. Referring to the functions of such a cabinet officer the committee of the American Medical Association said: "He will represent the medical consciousness of the nation, and be one to whom we all can look for the exploitation of measures that will direct continuous scientific and collective investigation, in regard to endemic as well as epidemic diseases that afflict the people. He will be able to co-operate, co-ordinate, unify and utilize, in the discharge of his duty, all the work of State Boards of Health, now so well organized in various States of the Nation; and these in turn will find themselves strongly reinforced by the example and authority of a great central officer who will be equal in function and opportunity with the other members of the President's cabinet." He would also have to consider the questions of higher medical education, of the regulation of immigration and many other questions pregnant with the vital interests of our great nation. Can you conceive of a more important measure?

A. W. Suiter, in his address at the eighty-sixth annual meeting of the Medical Society of the State of New York, puts the case even more strongly: "The Fifty-first Congress of the United States has just passed into history. Among the many famous distinctions which it won, was its title to the appellation 'The Billion Dollar Congress.' Think of it, one thousand million dollars appropriated by a single Congress for the material interests of this nation! And in the multitudinous bills which provide for the disbursement of this enormous sum of money not one clause or paragraph appears which can, in any manner, be construed to apply directly to the elucidation of any one of the important and vital problems connected with the prevention of the infectious diseases with which the tax-paying people are constantly menaced or afflicted." Dr. Suiter proposes that there be a Health Department of the Interior, organized on the lines of the old National Board of Health, and the Marine Hospital Service especially, clothed with powers relating to external quarantine. These to act separately or conjointly as circumstances may dictate; both to be officered as may be found necessary and the officers salaried and even pensioned upon retirement, that they may devote their whole time and energy to the duties of their positions. In connection with the former department he should have numerous experiment stations established, which should be entirely under government patronage and control, and fully equipped with laboratories—chemical, physical and bacteriological. Some such experiment stations as he describes—though of course not under government control—are already inaugurated; those most recently and thoroughly equipped, perhaps, being in connection with the Departments of Hygiene, in the University of Pennsylvania, at Philadelphia; and the University of Michigan, at Ann Arbor, where every facility is afforded to those interested in this line of work, and especially to public health officers, at the minimum expense. But, the crying need seems to be for some centralized management in order that the best results may be obtained. This we hope to attain in the development of the Department of Public Health, which will have, among other functions, the supervision of the obligatory examination of food stuffs and meats. Referring now, more particularly, to the subject of trichinosis, we have estimated that in a city of the size of Erie the cost of inspection of pork products, which are liable to be infected to the extent of two and a half per cent., need not add a quarter of a cent per pound to the cost to the consumer. This is indeed insignificant when we take into consideration that we can in this way, and only in this way, secure entire immunity from a horrible disease.

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Railway Hygiene.

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IT is beyond a peradventure that many more valuable lives are lost annually by the disregard of ordinary sanitary precautions in our railway trains, than are killed by accidents, yet it would appear that comparatively little is being attempted to mitigate existing evils in rail transportation.

The traveler making a long journey is not unlike the soldier going to war. There are certain possibilities of death from accident, just as there are chances of a soldier's perishing in battle. The danger from more or less seriously impaired health, which may even terminate fatally, may be likened to the mortality resulting from disease and exposure incident to a severe campaign.

The reports of railway companies, of the thousands transported in safety and the few injured or killed by accident, have a very pleasant coloring for prospective travelers, but nothing is said, and perhaps little thought given to the hundreds, and perhaps thousands, who are suffering from serious disease contracted in cars; or of many whose lives have paid the penalty of the exposure to the dangers of our railway travel. I am not an alarmist. I quite agree with old Horace that

"The death most to fear
Is the death we least dream of."

The American traveler in European countries is very prompt to discover how miserable in every way are the railway carriages we find abroad, in comparison with our own luxurious trains in the United States.

We see on every hand the circulars and posters describing the elegance, comfort and safety of our solid vestibuled trains, with dining cars, buffet cars, Pullman sleepers and all that. We have cars with libraries, and cars with barber chairs, where one can have his hair cut after a fashion (and a very poor fashion it usually is), while going at the rate of fifty miles an hour. When we enter these luxurious cars in the evening, and start on a long journey westward, we are apt to be favorably impressed with the handsome appearance of the interior. After a while we begin to settle down for the night. We find the lower berth decidedly uncomfortable in many ways. A great deal of cold air comes in even through the double windows. The temperature of the car is very near 80° F., if not dangerously beyond that. The heavy curtains give little promise of refreshing sleep. We cannot help wondering who breathed upon them the night before. The blankets do not seem particularly clean, and we very much doubt if they are. Giving the matter the largest benefit of a doubt, we are thankful we do not know who slept in them last night. The linen cover of the pillows is not very assuring, and we know how it probably has been used, and that its resting-place is under the cushions of the seat most of the time. These and many other cogitations may lead to a more or less broken sleep from which we awaken, much to our astonishment, either thoroughly chilled, or reeking with perspiration. "Many men of many minds," "Many birds of many kinds." Opinions differ as to a desirable temperature. The porter, whose mind is mostly occupied with reckoning up the pecuniary value to *him* of the inmates of the car, decides upon the question of ventilation as the spirit happens to move him. He is not much of a sanitarian, as a general thing, and his decisions are often fraught with no little danger to the unfortunate travelers. Morning comes, and we go to the lavatory to have our bath. This is where our courage usually forsakes us entirely. We can't help thinking what dirty hands have been washed there, and how much of this soap and scurf and dirt is clinging in and about that uninviting-looking basin. A day or two later on,—when we catch the porter washing a cuspidore in one,—the finishing touch is put upon our reasonable doubts. The words of Orpheus C. Kerr come forcibly to our mind:

> "In spite of all these pleasant scenes,
> The tourist stoutly swore
> That home is brightest, after all,
> And travel is a bore."

I could not help feeling sorry for a countryman of mine (literally speaking), who eyed, with ill-concealed contempt, a fair-haired Englishman, a bright, manly fellow, who dared to ask the porter to "please clean out that bowl."

Our cousins from Britain may have their faults, but certainly among their virtues is love of cleanliness. If many of our "deah chappies" would *only* copy the English *virtues* in their Anglomaniac labors, what a blessed thing it would be! The American sneering his disapproval of the Englishman's very sensible disgust for the Pullman lavatory reminded me of a story which is certainly apropos in this connection.

It was at a wayside inn, and the dusty traveler after contemplating with considerable abhorrence the "overworked" roller towel, had the temerity to ask mine host for a clean one. "What," demanded the economical publican, "a *clean* towel! Isn't this good enough for you? Why, bless your soul, man, fifty men have wiped their hands on this, this very day, and not one has complained until you come along. You want this world, you do."

Well, this is enough for a portion of our digression. We could easily probe and discover more of a carious nature, but we forbear.

"And then to breakfast with what appetite ye may." It matters little whether it be buffet nutriment or the one-dollar-a-meal dining car. Luxurious eating it certainly is *not* always. Indeed, some of it is positively bad, and sometimes it is very good.

The dining-car waiters are terribly hurried about two things, if it be a Wagner dining-car: one is for the guest to hurry up and the other is to get possession of the fee. We look in vain for the sign "Guests are requested to eat as rapidly as possible, keeping time with the speed of the train," but the porters remind us constantly that we must hurry. "Never mind how little you eat; eat it fast and pay your dollar." This seems to be what they long to tell us. There is one thing west of the Mississippi I like, and you find this in the Pullman cars, "Meals, seventy-five cents," and just as good as the Wagnerian; and another blessing, "Guests are requested not to fee the waiter."

The American traveler's digestive system is really in danger during a long journey, and it would be interesting to know how many escape after longer or shorter exposure.

A recent trip, covering ten days and nights in our best trains and in our most comfortable cars, has convinced me that the prayer in the Litany "for those who travel by land" should still be retained. Dangers are plenty enough. But let us think of those who are not having a first-class cabin passage, but an ordinary "first- or second-class" steerage experience, for our common cars are quite as bad as the steerage of an ocean steamer, perhaps I might say worse, but at any rate, a walk through these foul wagons reminds one of the steerage very forcibly.

No, we are not justified in boasting about our railway trains.

As our beloved President Lincoln used to say so often, "Oh! why should the spirit of mortal be proud?"

The smoker of a vestibule is no better ventilated than the other cars of the train. Here, in an atmosphere loaded with tobacco smoke (and the cigars are often the miserable specimens obtained at the bar, for a regular bar and bartender and waiter is to be found here), men are lounging in the arm-chairs, drinking, smoking, swearing, politely (?) telling hard stories and idling away the time.

The library shelves are not interfered with, but one or two growing young men are receiving impressions to which we should be sorry to have our own sons exposed if we could prevent it.

To return to the subject of ventilation and to our sleeper, which by this time has had the blankets of upper and lower berths and the curtains all folded away together in congenial companionship, and the pillows stowed under our cushions where we are sitting; we find plenty of it for our attention.

The car is neither warm nor cold, neither is it fresh nor well ventilated. It does have a very disagreeable odor, a regular sleeping-car odor, which travelers will recognize. We take a seat in our section. Above our heads the long, narrow windows are half opened, and a cold, disagreeable draft is blowing directly upon us. We realize at once, with General Skobeleff, "We own up to being afraid of a draft." By and by the car becomes thoroughly overheated again, and we fall asleep to wake up once more entirely chilled in the body. We have had a hasty, none-too-well-cooked breakfast. We have had no exercise after breakfast, and chances for indigestion are very, very good. We have been overheated till perspiration starts from every pore. We have fallen asleep and gradually cooled off, until we have become thoroughly chilled through, especially around the stomach.

It needs no physician to tell us that we have been exposed to danger sufficient to bring about a severe illness. After this has happened several times a day, for two or three days, what are the chances for a long sickness after we get home?

Most medical men would say they are very good indeed. And it is so. Many and many a life has been sacrificed from this cause alone. Many weeks and months of sickness, and perhaps chronic invalidism, have resulted from this abominable disregard of human health and life. To realize this fully must arouse the indignation of any sensible man. To know that our families are exposed to these dangers, as well as to the well-known dangers of travel, is enough to discourage us.

Stand with me any evening, between 5 and 7 o'clock, at any of our railway stations, and witness the throngs of over-worked, nervous, tired people hurrying to their suburban homes.

The business man, the laborers, the delicate young women, students, all sorts and conditions of men and women, hungry and oftentimes worn out, and in the best condition to take cold, enter these traps called cars, for their longer or shorter journeys. Perhaps they have hurried, with their heavy overgarments, to catch the train, and are more or less overheated from their exertions.

It is quite the same to the railway company whether there are seats enough to go round or not. The true-hearted American will see that all the women are seated even if they have to stand themselves, as they often do.

Let us glance through the train. Like the luxurious Western vestibule, it may be overheated, or it may be cold; but without doubt the deadly side windows are open, and while many get through the journey safely, there will be a good representation of this train-load of human beings on the sick list very shortly. The undertaker will reap some of the harvest, the doctor will have a good share, and the druggist will find his sales of cough medicines, plasters and grippe medicine largely increased. There is no doubt about it, this indifference and neglect has made many more victims than we imagine.

Our railway directors may be very intelligent men, but they seem to have little care of the necessity for rational ventilation, or else their sanitary engineers or advisers have neglected their duty, if, perchance, such needed officials exist at all. Too often the cars are built, like gravestones, mostly after one pattern. We have no safe or rational system of ventilation in any railway car I have ever seen, and certainly my experience has not been limited. A safe ventilator for cars is urgently needed. We need fresh air and plenty of it, but we must be able to obtain it without risking our lives.

For the inventor who will discover a safe, practical system, wealth and honor are awaiting.

It will save more lives than the air brake, and will be a blessing to thousands. We must see to it that the public is brought to realize the necessity for painstaking care in matters relating to railway hygiene. Public health is public wealth.

The Enforcement of Sanitary Rules.*

BY BERIAH EDWIN MOSSMAN, M.D.,
Greenville, Pa.

Mr. President and Gentlemen of this Convention:—In the short space of time allotted me, I desire to say a few words on the subject of Sanitary Legislation and its Enforcement. It is a subject that has received any amount of attention from sanitarians in this State for many years, and is yet far from being settled in a manner satisfactory to the minds of medical men and those interested in sanitary science. It is the foundation upon which all our work must rest. Without good sanitary laws it will be impossible to have thorough organization that will reach every town and borough in the State.

A careful review of the laws relating to hygiene on the statute books of the Commonwealth of Pennsylvania shows that considerable legislation has been passed, with a view to the protection of the public health. The first Act was passed January 22d, 1774, over one hundred years ago. (MS. Laws, Chap. 289.) Since that time numerous Acts have been passed, some of a general character, and some special laws relating to certain municipalities. The whole mass of legislation is, to a great extent, of a desultory character; and, while many of the Acts are truly valuable, they need trimming and amending; so that they may apply to every incorporated borough or city within the limits of the State.

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* Read before the State Sanitary Convention at Erie, Pa.

The most important Act was passed June 3d, 1885, which created the State Board of Health. Nearly all the existing boards of health throughout the State were organized under the laws of May 23d, 1874, relating to cities of the third class, that is, cities of between ten and one hundred thousand people. The law regulating the sanitary powers of boroughs was the Act passed April 3d, 1851.

This law places in the hands of the burgess and council sufficient power to maintain a good sanitary condition within the borough limits; but as no one officer is given special power of responsibility in the matter, it is neglected.

In cities where the councils have authority to create local boards of health and appoint health officers, who are compensated for their services, the sanitary laws are generally well carried out, and the people receive the benefits therefrom; but this cannot be said of the boroughs that come under the Act of April 3d, 1851. I do not believe there is a borough in the State of Pennsylvania that is in a good sanitary condition, and the most of them are run regardless of any attention to the provisions of the act regulating the sanitary affairs of such corporations.

It is the custom in boroughs to appoint a street commissioner, whose duty is to clean the steeets and alleys and superintend all works of construction within the borough limits. Complaints must usually be made to the burgess or council by the citizens who have any grievances they desire to have settled, or any complaints to make about the sanitary condition existing in their locality. The private citizen must become either actually or substantially a prosecutor to accomplish what should be done for him by some responsible official. It is usually the duty of the street commissioner to attend to all complaints that are made or brought before the burgess or council. Existing evils are seldom corrected, and a deplorable condition of sanitary affairs invariably exists in most incorporated boroughs.

Sanitary organizations and work are almost entirely confined to municipalities, and there is an absence of any active interest taken in many places where local boards of health exist, and at the same time it is proper to state that in a number of incorporated cities of the sixth and seventh classes there are no boards of health or health officers. In many large-sized boroughs, typhoid fever is present all the year round, seldom ceasing, and at times prevails to an alarming extent, with many fatalities. The same can be said of visitations of scarlet fever and diphtheria, that have assumed in interior towns almost an epidemic form, and have wiped out some families entirely. Efficient boards of health in such places would soon command the situation, and the enforcement of existing sanitary laws would arrest the progress of contagious diseases, and save many lives that are unnecessarily sacrificed.

The evils existing in all large-sized boroughs are many, and to express my views clearly before this Convention, I will present the condition of one of our most thriving boroughs in the Commonwealth.

The place has 9,000 population, and is a busy, thriving manufacturing town. It has no board of health or health officers, and the only person who takes any interest in the sanitary condition of the place is the street commissioner. Over 1,300 children daily attend the public schools. There is no sewerage, and very poor surface drainage. The streets are not paved, and are in very bad condition. Every spring the accumulated filth on the streets and alleys is carted off and some fresh road material is carted on. The back yards and alleys are made to receive the deposits of wash-water, dish-water and all the refuse of the kitchen. In some few instances, cesspools in the yards receive everything, including the pipes from the water-closets; but most commonly, the fearful old-fashioned water-closet stands in the back yard, a source of terribly offensive gases. In this place, typhoid fever is almost always present; diphtheria every season claims its many victims, and scarlet fever is generally present with its quota of deaths.

Too little regard is paid to the prevention of the spread of contagious and infectious diseases in rural districts, by physicians and those in whose homes the disease exists. An effort is commonly made to conceal the fact of the presence of the disease, both by parents and physician. Denials are made, and neighbors exposed carelessly to infection. Scarlet fever, diphtheria and typhoid fever are concealed from the public. No notice is posted on the house as a warning, nor are there any quarantine measures taken. This is not right, and should be held as criminal. Infected houses, as well as disease-breeding yards, vaults, wells, drains, cesspools, and other nuisances on private premises, should be placed under strict sanitary police surveillance. It is unnecessary for me to comment upon such a state of affairs, as every sanitarian well knows what should be done. This description of a growing, thriving town is but one of many such in the large State of Pennsylvania. Borough officials are commonly ignorant of the great powers invested in them by the Act of 1851, and seem to labor under the impression that the only duties resting upon their shoulders are to see that the streets are properly lighted, mud-holes filled up, and crossings put in.

It takes time to accomplish all great works, and it will take time to place all the cities and boroughs in the Commonwealth, in excellent sanitary condition. It can be done, and will be accomplished in the future, and this great task will have to be the work of the State Board of Health. Through this body local organizations should be established in every incorporated borough in the State. If the Act of April 3d, 1851, governing boroughs, does not confer the power upon the burgess and council to create boards of health, let an Act of general character, embodying all that is necessary, be presented to the Legislature. It is the duty of the State Board of Health to see that every borough has a local board or an active health officer, and this can only be accomplished by having the existing laws carried out, and wherein they are deficient, so amended as to meet the requirements. This once accomplished, and every local board, municipal and borough, working uniformly under the laws, and maintaining satisfactory relations with the State Board of Health, the great objects aimed at by the creation of the State Board of Health, and the enactment of the sanitary laws, will be secured.

I would suggest that the State Board of Health draw up a bill to be presented to the Legislature, at the next session of that body, in which will be embodied a provision for the appointing of a board of health or health officer in every incorporated borough or township in the State of Pennsylvania, defining the powers or duties of such boards of health or health officers; and that the borough or township compensate such boards of health or health officers for their services; and that such boards of health or health officers work with, under, and in co-operation with the State Board of Health, as specified in the Act of June 3d, 1885, creating the State Board of Health. This bill should require the registration of births and deaths throughout the Commonwealth. In other words, a complete and satisfactory, general and uniform law should be made that will cover any point needed to establish a harmonious and systematic system of sanitary organizations in every city, borough, and township in the State.

Obesity.

A French journal recommends a mode of dieting for curing obesity, which is attributed to an army doctor. A colonel, who was threatened to be retired from the army, as he was so heavy that it required two men to lift him into the saddle, became thin in a few weeks, and to such extent that he had to take means to recover what he had lost. The means consisted simply in not eating more than *one* dish at any meal. It is said by doing this the stomach never takes too much. Nevertheless nothing but the one dish should be taken; no condiments or soups or supplementary desserts should be allowed.

Fish Diet and Leprosy.

Dr. August Crane, lately Government Physician in Hawaii, writes as follows to a contemporary on the subject of fish diet and leprosy: "From time immemorial the staple food of the native Hawaiians had been fish, and principally raw fish. Until about 1860, there is no history nor tradition of the existence of leprosy among them. At about this date it appeared, and at the time of its appearance white people had been among them for forty years, and their food and methods had greatly changed. Canned foods, fresh meat and vegetables had been so widely introduced that the use of fish, and especially raw fish, had enormously decreased, and could not be considered as a prominent feature of their diet. At the present day, while consuming no remarkable amount of sea food, one Kanaka out of thirty is a leper. All fish, no leprosy; little fish, much leprosy. This has been the history in Hawaii." These statements above expressed appear to be a formidable indictment against the theory that fish diet and leprosy stand in the relation of cause and effect. But the advocates in favor of the theory are now few and far between, despite the powerful authority of Mr. Jonathan Hutchison.—*Medical Press.*

Dr. Walter A. Ford, of this city, sailed on the 4th of June to visit the Medico-gymnastic Institutes of Germany and Sweden.

THE ANNALS of HYGIENE. ✣ ✣

The State Board of Health is not responsible for anything appearing in this Journal except that which bears the official attestation of the Board.

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EDITORIAL.

Letters on Health.

[Under this "Editorial Department" the editor proposes to publish a series of running "letters," written in the first person, in the course of which he will be glad to answer any questions that may be addressed to him.]

WHAT IS HYGIENE?

YOU ask me what the word "hygiene" means. You seem to have a vague, shadowy, illy-defined notion that it is some kind of a Latin or Greek word, that relates to something belonging to doctors, and that you, as a layman, have nothing to do with it; yet, at the same time, I am sure from the tone of your letter, that you are a sensible person, who fully appreciates the value of health. To disabuse your mind of the idea that you have no interest in hygiene, I would merely say to you that this word means the science that treats of the prevention of disease and the preservation of health.

IS DISEASE PREVENTABLE?

Suppose I were to deny that two and two make four; you would surely consider me a peculiar individual whose denial was unworthy of serious consideration; so must I consider anyone, who, in the light of present-day knowledge, would attempt to claim that disease was unavoidable. The accumulated experience of time, the every-day occurrences of the world, clearly demonstrate, to the unprejudiced observer, the fact that disease is preventable.

THE CAUSES OF DISEASE.

In the economy of nature, disease was not provided for; that is to say, the laws of nature are designed for the origin, maintenance and propagation of healthy organic life. The natural code has for its aim a natural beginning, a natural existence and a natural termination of both vegetable and animal life. The aim of our civil laws is the perfection of social life, their universal and accurate observance would make crime a thing unheard of; yet, the most law-abiding community must have its judges and its juries, its prisons and its hangman, all because the people will not obey the laws.

If we violate the laws of man, *and are found out*, the prison or the scaffold are the results; if we violate the laws of nature, whether this violation be obvious to our neighbors or not, disease is the result. You may accept it as an axiom that disease always implies the violation of natural laws.

ANCESTRAL SINNING.

You, yourself, may be a law-abiding citizen, so far as the observance of natural laws is concerned, yet, just as the stigma of a crime against human law impresses itself upon the descendants of the criminal to their material disadvantage, so, even more inevitably and more relentlessly, will the crime of some ancestor against natural laws perpetuate itself in your ill-health. I do not mean that because your grandfather was a *natural* criminal, so to speak, that you must, inevitably, be an invalid, as the world understands the word; far from it, but that you may rightly comprehend my meaning let me give you an idea of

WHAT I MEAN BY HEALTH.

For the sake of illustration I will assume that health is an absolute word, incapable of qualification; that the expressions of "good health," "poor health," "fair health," "ill health," are not only grammatically incorrect, but that they are meaningless. I will assume, (and I think, correctly), that the word "health" implies an absolute, unqualified condition; that it means perfection of function; and that when perfection does not exist, health is wanting. This is a definition of the word health that I would use for purposes of discussion, though I would ask you to try to correctly grasp my meaning and not hastily jump to the conclusion that all who are not in a state of perfection of function are therefore what the world would call sick.

If we could imagine an ideal planet, wherein, from time immemorial, every one had faithfully observed all the laws of nature, then would we have a community of physical perfection, to whom the word health could be unhesitatingly applied. If then

HEALTH MEANS PERFECTION

It must be obvious that the word does not admit of qualification, for it would be absurd, on its face, to speak of "good perfection," of "poor perfection," of "fair" or of "ill-perfection." Perfection means perfection and health means health and nothing less; "perfect health," to me, sounds as incongruous, as, no doubt, "perfect perfection" would sound to you.

ARE THERE ANY HEALTHY PERSONS

As you understand the word, you ask me? Very few; there are very few persons whose functions are perfect. The simple fact that you look with amazement upon a man or woman whom you are told is eighty or ninety years of age ought to be ample evidence to your senses that there are very few persons who are healthy as we now understand the word. Can you give me any good reason why, if ten persons can live for one hundred years, every person ought not to do the same? I can, at least, give you an unanswerable reason why they do not. It is because they themselves, or some of their ancestors—some of those whose lives their lives are in reality continuances of—have been criminals in the sight of nature.

Accepting this view that health implies perfection and that there are so few healthy persons, does not the thought suggest an appalling condition of humanity? By no means; to one who will not foolishly and hastily jump at conclusions, but who will thoughtfully follow out my line of reasoning to its logical conclusions I would suggest to you that even though the ambition to be the richest man in the world may have a more or less fervid existence in the breast of every one, yet the fact that the infinitely large majority do not and cannot reach the goal, this fact does not militate against the measure of happiness that the measure of wealth of each individual can procure for him.

So, also, even though that perfection of function, which we call health, may be impossible to many, because of inherited defects, yet in the pursuit of health a condition approaching thereto may be secured and enjoyed by every one, and the greatest possible measure of happiness may be secured therefrom.

Differing, however, from the pursuit of wealth, wherein the pinnacle that will support the "wealthiest man" is but large enough for one; the plane that can be occupied by the healthy is large enough to accommodate all, who, by their own exertions, succeed in reaching it. I would ask you particularly to note that I speak of those who by

THEIR OWN EXERTIONS REACH THE GOAL OF HEALTH,

Because I would have you clearly understand in the beginning of these letters that, while the clerks may make money for the employer, the individual only can make health for himself. While "health boards" and "health officials" can do much to hold disease in check, it is the individual only who can bring health to himself.

Legislation cannot make a man moral, nor can it make him healthy.

WHAT IS DISEASE?

For the sake of lucidity let me draw for you a distinction between disease and derangement. Let me suppose a strong man, to all appearances well yesterday, to-day confined to his bed, in the early stages of typhoid fever or diphtheria, or pneumonia. This man has a disease; he will pass through a period that will terminate either in death, in restoration to the condition that he was in before the disease attacked him, or that will leave him deranged. Again, let me suppose that you are the victim of some one of the usually called "chronic organic diseases," (Bright's Disease will serve my purpose of illustration), I would now say that you are deranged. I would make this distinction between disease and derangement, because I would impress upon you the fact that while legislation can do much to stay the ravages of disease, individual action alone can eradicate or restrain derangements. Disease, as we understand it, may exist, with but temporary interference of function. It is true, there is, even here, a derangement, but it is only for the time. A poison has entered the system and is there doing such work that the vital phenomena are, for the time, interfered with; but in the case of chronic disease, which we are calling *derangement*, the case is different. In the former instance the trouble is due to a poison in the body, just as the onward progress of a locomotive engine might be stayed by a stone wall built across the track, the power for the engine to move being all the time making, yet its manifestations being impeded by a mechanical impediment.

In the latter we have a derangement of the organ affected by which, because of its own inherent defects, it cannot properly functionate, just as would be the case if the vital parts of the engine were so affected that the motor force of the steam could not be generated.

DO I MAKE MYSELF CLEAR?

Let me try again. The person suffering from disease might be likened to a city that is destroyed by the overwhelming power of an invading force, while the victim of a derangement, of which I write, might be typical of the city that falls into decay because of its own inherent weakness. In the one case (disease) there is an invasion, the destroyer comes from without; in the other, (derangement) the defect is an internal, an integral one; there is no assault, but the citadel falls because it is unable to stand. While we may thus, theoretically, make a distinction between disease and derangement, for practical purposes, to your mind it will, doubtless, seem that there is really but little difference between them. You will understand that there is health and sickness and you will not care particularly for these niceties of differentiation.

You will not want to be sick, and you will want to be well, and you will thank me, doubtless, if I can tell you how you can preserve your health.

HOW TO PRESERVE HEALTH.

This I can do. I can tell you how most of the acute diseases can be avoided and how the chronic diseases or derangements may, also, be avoided; but, after I have done this, after I have told you of the means of avoidance, you, yourself, must put my suggestions into practice—no one can do this for you.

Of course, I am not familiar with the intimate life history of your ancestors, but for all that, I can say to you, with absolute certainty, that no matter how much they may have sinned against the laws of nature, you have it in your power to nullify, to a greater or lesser extent, the evil that has been entailed upon you by this folly of theirs. Folly, was it? Yes, I use the word advisedly. If one will but impartially reflect thereon he cannot help but conclude that it is folly for any one to disregard the laws of nature. True, the mass of humanity is so disregardful, but this fact only goes to prove the truth of the assertion that the rarest of all senses is *common sense.*

I take it that you are a thoughtful, intelligent person, a person who has a brain and understands the use thereof. I take it that you are not a *piece* of humanity, but that you possess an individuality; that you are a man who has some care for his worldly affairs; that you do not allow your business to care for itself, but that you guide and direct it, and I do you the credit of supposing that you will care as much for your physical as you do for your business welfare. Am I right? Do you wish to be well, or is it, with you, a matter of indifference whether or not you possess that integrity of function, the possession of which makes the very act of living a pleasure incomparably superior to that which you can derive from any other source?

Believe me, a healthy man is always a happy man, and the nearer one approaches to our ideal condition of health the greater will be his measure of happiness.

It is not unmanly, nor is it beneath the dignity of any one, to think of his health; on the contrary it is only the average individual—he who enters, passes through and departs from the world without having made any impression thereon, it is only such, it is only those who never do any particular good for themselves or for any one else, who accept themselves as they are and try not to better their physical condition.

The men of mark, of all ages and of all times, the leaders of men—those who make history, those who make themselves and others, those whose guiding hands direct the steeds of progress—all such ever have been, are and ever will be, thoughtful of their own individual, physical welfare. Not morbidly so—not ever thinking of self; not anxiously solicitous lest this, that or the other trifle may injuriously affect them, but in a broad, liberal, catholic, intelligent manner, penetrating the laws of nature and obeying them.

Do you understand me? What I mean is that men and women who give outward evidence of an internal intelligence, if they own handsome houses or valuable horses, will, without solicitous anxiety, see to it that these houses or horses are properly cared for, so, also, will they accord equal thoughtfulness to themselves.

The prudent house-owner will consider it to his interest to keep his property in repair, so, also, will the prudent owner of *self* consider it to his interest to keep himself in repair.

Am I not right? Is not a thoughtless, heedless disregard of self, in itself, prime evidence of a want of intelligence, to which neither you nor anyone else would be anxious to plead guilty?

It seems to me that logic must compel us to believe either that life is valueless or that health should be our first thought.

Your own observation, among those of your friends who have become, what the world calls invalids, must convince you, if you are open to reason at all, that health, to one who has lost it, is the most desirable of all earthly possessions. If, then, when once lost, it is so earnestly, so eagerly sought for, should it not be guarded when possessed?

Money may be made and lost and made again; not so with health—at least not in all cases; once lost it is but seldom that it can be regained. Remember that by health I mean perfection of function. It is true that a person who has been sick or even irrevocably deranged, may yet, by care, regain what the world would call health, but it would not be the perfection that we now understand by the word.

But, you hastily say that you do not want perfection; you are satisfied with what you will call *fair* health. If you are not incapacitated for what you may wish to do you are satisfied. All right; I will agree with you, while I, myself, would prefer to aim at perfection, even though I should fall far short of the mark; I must admit that I am an enthusiast on the subject of hygiene, and that I have no wish to thrust my own views upon you or any one else, though I do wish that I could inoculate the whole world with a concentrated essence of my own enthusiasm. I will agree with you that all you want is what you call *fair* health, so that you can attend to your work and have your pleasures and avoid sickness that necessitates the calling of a doctor. You are willing to have the slight aches and pains and derangements that are so common to humanity; you are willing that an occasional slight bilious attack shall fall to your lot; you do not ask for perfect digestion, so long as you are not troubled with the torments of dyspepsia; you are not solicitous for a perfect nervous system so long as it is "good enough;" you have no particular desire to live for one hundred years—sixty or seventy will answer your purpose. Well, all right; you are not unique; you have plenty of company; there are countless thousands upon thousands who are just like you. If, fortunately, you are descended from a vigorous, long-lived ancestry, then, in some instances, you can do pretty much as you please, and you will attain your sixty years in comparative comfort. You have inherited such a large fortune that you can draw on the principal and it will yet last you for the time desired; but if you are a conscientious man I would advise you not to marry, for if you are intending thus to draw upon your principal your children will not be what they would have been had you lived only upon your interest and transmitted to them your physical inheritance intact.

If, on the other hand, your ancestry has not been overly vigorous or long-lived, then will it be necessary for you to watch yourself, else that which you have inherited will not last you as long as you may wish.

The points that I will give you in these letters will be sign-posts on the road to perfection. Follow them all and you will be journeying towards this goal. You may not reach it, but some of your descendants surely will. Heed some of them and you will make some progress; neglect them all and you will wind up in the desolate valley of premature death or invalidism.

Disinfecting Foods.

The Governor-General of Kiév appointed committees last fall to gather the morsels that are left on the table after meals in the large cities, and to send them to the famishing peasants. A large portion of this food comes from communal institutions, such as casernes, hospitals, and from social repasts. The question arose whether it would be possible to disinfect these fragments so that the contagious diseases of the eaters who left them on the table might not be conveyed to the beneficiaries without at the same time destroying the food. The question was referred to the Bacteriological Institute of Odessa, and the following instructions were received in reply: "Morsels of bread left over by persons infected with diphtheria, typhoid, or other contagious diseases, become perfectly disinfected if dried at a temperature of 250° F. But if such a degree of heat cannot be obtained in the drying process, the morsels, before drying, must be submitted to a current of steam of that degree for at least one hour."

NOTES AND COMMENTS.

Old Folks in Japan.

In a population of about 40,500,000 in Japan there were, in 1890, 81 persons of 100 years of age, 46 of 101, 26 of 102, 7 of 103, 6 of 104, 1 of 105, 7 of 106, and 3 of 107; in all 177 persons of 100 years of age or older.

Cannibal Therapeutics.

Two Tartars in the neighborhood of Kazan have been sentenced to twelve years' penal servitude for the murder of a little girl six years of age. They had cut out her heart to give it to a sick person to eat, as a human heart had been prescribed by a mullah!

The Vegetarian's Heart vs. the Meat-Eater's Heart.

In the *Nineteenth Century* for April, 1892, Lady Paget, writing on the subject of vegetarianism, and in its defence, gives the following among several arguments: "While the meat-eater's heart has seventy-two beats in the minute, the vegetarian has only fifty-eight, therefore twenty thousand beats less in the twenty-four hours."

Ovid's Recipe for Wrinkles.

Take equal parts of bean and barley-meal and mix with raw egg. When the mass is thoroughly hard and dry it should be ground to a fine powder and made into an ointment with melted tallow and honey. A thick layer of this applied to the face every night was warranted to smooth out all wrinkles and make the skin as soft as a baby's.

Infection by Telephone.

The possibility of infection by the use of the telephone mouthpiece by successive speakers has been hypothetically discussed before now. A correspondent of the *British Medical Journal* brings forward some facts in support of the possibility of such an occurrence. Dr. Anderson, the Medical Officer of Health for Dundee, who has had the matter submitted to him, has given a very sensible answer, which sums up the position in a practical manner: "If a person who is suffering from sore throat of an infectious nature brings his mouth into close, or even near, relation to the mouthpiece of a telephone instrument, I think, in the act of speaking and expiration of air from the lungs and throat, it is possible that infectious particles might adhere to the instrument. I think an instrument which is so much exposed to the human breath should be frequently cleansed, whether the instrument be in a public or private room, and perhaps the simplest and most convenient cleanser is warm water and carbolic or sanitas soap."

Compulsory Vaccination in Japan.

The local authorities in the prefecture of Tochiki-Ken have appropriated the sum of 4,996 yen to be used for prevention of smallpox, principally for public vaccination. The Governor has issued a proclamation ordering that all persons under forty years of age should be vaccinated, and that the vaccination should be repeated if it did not take the first time.

Leprosy in Spain.

Leprosy has been on the increase in different parts of Spain for some years past, and the extension of the disease has at last aroused the attention of the Government. On February 16th the Director-General of Beneficence and Sanitation sent a circular letter to all governors of provinces, calling on them to take such steps as may seem necessary under the circumstances.

Yellow Fever and Revolutions.

If the belligerent statesmen of Brazil would inaugurate a campaign against the yellow fever, which has desolated a great part of their country, they might win the crown of triumphant statesmanship. It is not an unconquerable adversary. It has been driven from a good many places in the world through the enforcement of sanitary laws by courageous strategists.—*New York Sun.*

Variation in the Nutritive Value of Potatoes.

Chemical analyses have demonstrated that potatoes lose much of their nutritive value in the months of June and July. Even the new potatoes of this period contain little nourishment, and must be taken with other foods. The chemist, Stockhardt, has shown that potatoes contain 10 per cent. of starch in August: 14 per cent. in September; 15 per cent. in October; 15 in November; 17 in December; 17 in January; 16 in February; 15 in March; 12 in April; and 10 in May. Hence potatoes are most nutritious in winter time.—*Clinet Presse Medicale Belge.*

The Cost of an Epidemic.

Dr. Thresh, the medical officer for the county of Essex, having obtained full returns of the late epidemic of influenza, estimates that no fewer than 450 persons died under the immediate attack, and that no fewer than 1,400 deaths occurred in the county from its direct and indirect influence. The monetary loss for the two months during which the epidemic prevailed he states at not less than £50,000, on the basis of the loss of wages of adults calculated at 12s. a week. He adds: "I am, however, afraid that had the county suffered from an epidemic among cattle, causing in the time the same number of deaths and inflicting the same pecuniary loss, the alarm produced would have been greater and more permanent."—*British Medical Journal.*

La Grippe in Ancient Greece.

A student at Amherst College, claims to have discovered that *la grippe* is not a modern disease, but prevailed nearly 500 years before Christ, said student having found a description of the malady in Book II, of Thucydides. This ancient author gives a very accurate description of the disease, and refers especially to the mental depression which accompanies the ailment and is one of its most distressing symptoms.

Re-vaccination.

In discussing the period of life at which re-vaccination should be practised, Dr. Hervieux (*Bul. del Acad. de Méd.*, February 2, 1892) concludes a paper as follows: (1) Re-vaccinations should be made, the first at ten years, the second at twenty, and re-vaccinations *en masse* in regions which are threatened or invaded by severe epidemics of variola. (2) No one should plead an exception to the rules of the civil or military authorities because of cicatrices of vaccination or of variola more or less marked.

Hereditary Influence.

It is stated that the probable duration of man's life may be known if the ages at death of his parents and grandparents are known, and that if these are added together and then divided by six, the quotient will be his approximate term of life. If the quotient exceeds sixty, one year may be added for every five; if it falls below sixty, one year should be subtracted for every five. The presumption in this proposition is that with good fortune a man may equal, but he may not hope to much excel, the average of his parents' and grandparents' lives.

Preserve Your Vigor.

A healthy, vigorous system resists disease. Worms burrow in decaying trees; not in the young, the vigorous, and the thrifty. Some persons can almost defy the deadliest diseases. Others fall before the slightest attacks. Many diseases come from germs, which plant themselves within the body, and then multiply and destroy. If we have the vigor that can resist the *first* of these little germs, we escape. But if the system is debilitated; if bad food and bad air have impaired vitality; if stimulants, strong drink, sensual and vicious indulgences, excessive strains, idleness or inactivity, have sapped the vigor of the system, then disease lays hold upon the enfeebled frame and works its overthrow. Many a poor fellow whose life is wasting and wearing away with some incurable malady, is only paying the penalty for those young days, when nothing he could eat, drink or do, ever injured him! He had the treasure of health; he squandered it, and now comes the time of settlement, and he finds "the wages of sin is death."—*Medical Brief.*

The Danger of Celluloid Buttons.

Professor C. Vernon Boys, of England, reports the case of a lady, standing near a bright fire, who suddenly found herself enveloped in smoke. A gentleman who came to her rescue succeeded in crushing the ignited portion of her dress, not, however, without severely burning his hand. On investigation the fire was found to have originated from a spot where a large fancy button had been, but had disappeared. Similar buttons were subsequently examined, and were found to be highly inflammable, being made of celluloid.

Feeding of Infants in France.

A recent legal enactment in France prohibits the giving of any form of solid food to infants under one year of age without the authority of a prescription from a qualified medical man. The employment of the rubber-tube nursing bottle is also forbidden. Two hundred and fifty thousand infants die in France every year, and it is claimed that one hundred thousand of this number could be saved by intelligent care. The passage of this law is due in a great measure to the efforts of the recently organized society for the protection of children, of which Dr. Rochard is the founder.

Progress of Cremation.

Cremation seems to be making steady progress. The Sanitary Council of Vienna has passed resolutions to the effect that the burning of the bodies of the dead is the safest mode of preventing the evils of earth burial. It has been decided by the Bombay Municipal Corporation to grant the request of an Englishman to be allowed to erect a crematorium for Europeans in the municipal burying ground. The Corporation has granted a plot of ground, measuring 40 feet square, for that purpose, at a nominal rent of one rupee per annum. The condition attached is to the effect that the crematorium shall be removed at one month's notice if the Corporation so requires.

A Law for the Prevention of Blindness.

Following the example of the State of New York, the State of Maine has passed the following law, which was approved by the Governor on March 28: "Section 1. Should one or both eyes of an infant become reddened or inflamed at any time within four weeks after its birth, it shall be the duty of the midwife, nurse, or person having charge of said infant to report the condition of the eyes at once to some legally-qualified practitioner of medicine of the city, town, or district in which the parents of the child reside. Section 2. Any failure to comply with the provisions of this act shall be punishable by a fine not to exceed $100, or imprisonment not to exceed six months, or both. Section 3. This act shall take effect on the first day of June, eighteen hundred and ninety-two."

Negroes and Malaria.

It has been a tradition for centuries that the members of the black race were comparatively immune from malaria, but of late numerous practitioners in malarious regions within the tropics have adduced evidence against this theory. Dr. Jenkyns, of British Honduras, writes to the *British Medical Journal* of recent date that his experience of nine years in that colony has taught him that the negroes are very subject to intermittent fever, which is, however, very amenable to small doses of quinine, but that they also suffer occasionally from a bad type of remittent fever.

Vaccination in Italy.

The *Sanitary Inspector* states that a new vaccination law went into effect in Italy with the beginning of this year, which requires that every child shall be vaccinated before it is six months old, and again at eight, or at any time whenever the sanitary authority deems it necessary to promote individual or public safety. Those who are not vaccinated and re-vaccinated according to the requirements of the law, are excluded from schools, factories, workshops, benevolent institutions, etc. Provision is also made for the cultivation and supply of both animal and human lymph. This has a direct interest for people in this country in view of the large and constantly increasing Italian immigration.

Mortality in England and France.

Two hundred years ago the mortality in England was 80 in the 1,000, and fifty years ago 25 per 1,000, while in 1889 it had fallen to 17.85. This result is the more remarkable since the birth-rate is so large, and it is well known that a large birth-rate increases the annual death coefficient. In France the mortuary rate, which at the beginning of the century was 28, is to-day 22.29, but the coefficient of births has fallen from 30 to 25 per 1,000. If the births in France were in the same proportion as those in England, the increased death-rate over this country would be still greater.—*Journal de Médicine de Paris.*

Curious Case of Lead-poisoning.

The sanitary authorities at Leith are engaged in an interesting investigation as to the cause of a wholesale poisoning of a ship's crew by lead. It appears that as far back as 1890 a bark left Leith for New York and Melbourne, having been provisioned by a Dundee merchant, who had purchased the sugar for the crew in Amsterdam. Shortly after starting the crew began to fall sick, and, one by one, were reduced to such a condition that it was with the greatest difficulty that the ship could be worked. One of them died. It was then found that they had all been poisoned by lead, and, the provisions being examined, it was found that the sugar was to blame. No one yet knows how it came to be contaminated by the lead.—*Medical Press.*

The Use of Fruit.

While fruit gives but little toward the nutriment of the body, it contributes materially toward keeping it in health. Bender found that fruit gives off a great deal of carbonic acid, while on the tree and when stored in the house; so that it is not well for persons to sleep in a room where fruit is kept in large quantity. Uffelmann praises the fruit diet in chronic indigestion, gastric catarrh, especially after alcoholic excess, hemorrhoids, cerebral fluxion, scurvy, and hepatic affections. Calculus is almost unknown in cider districts. The exclusive diet of grapes was highly commended by Niemeyer in plethoric conditions generally, and in obesity.

Bread and Dyspepsia.

The conclusion that wheat bread is unfit for dyspeptics, sometimes jumped at because ill effects are noticed to follow its use, is erroneous. On the contrary it has been pointed out by Bouchard and others, that fairnaceous food is peculiarly adapted to some dyspeptic patients. It is the microbes in the starch, which are capable of producing irritating acids, that cause the trouble. To avoid this, Bouchard recommends that only the crust or toasted crumb of the bread be used by dyspeptics, particularly those whose stomachs are dilated. The reason of this is explained by the fact that baking temporarily, though not permanently, arrests the fermentation of dough. When it is again heated by the warmth of the stomach the fermentation is renewed. In cases where the bread is toasted brown through, the fermentation is stopped permanently.

Home Heating.

In the *International Journal of Surgery*, October 1, 1891, "a family man," having "no interest in heating, except the interest of any decent man for a decent way of doing things," discusses the above subject. From his own experience he concludes that the methods of house-warming, "reckoned on the standard of quality and economy, run in about the following order: hot water, steam, stoves, furnaces, fireplaces." Hot-water warmth, properly constructed, he believes to be the most economical and healthiest and most convenient method of producing artificial indoor warmth. He uses, as less expensive, the direct system, which consists of having radiators in the rooms, the radiators being fed directly with the hot water, coming from the hot-water boiler. One of the cheapest and best methods of ventilation he knows of, is to have an opening near the baseboard, opening directly into the flue, or some other outlet, especially constructed for it, with hot-water or steam pipes in this opening, The pipes need not necessarily be near the room, but should be located not more than half-way between the opening and the outlet. A moderate degree of heat in these pipes will create a draft, and draw off the bad air of the rooms. Only a few of these pipes are necessary, and the amount of hot water or steam required to heat them is too small to be worthy of consideration.

The Bacteria of Melons.

Dr. Byron Halstead in the *Botanical Gazette*, November 11, 1891, describes a disease of melons and cucumbers on specimens from Bangor, Maine, and the central parts of New Jersey. To prove that the diseased plants were suffering from the result of the life of micro-organisms, numerous inoculations were made with the bacteria found in the diseased parts. The result was conclusive. The inoculated parts soon rotted and became affected in the same manner in which the original disease presented itself. Experiments were conducted also with seeds. Two lots, consisting of sixteen seeds, had been planted in two different pots, both of which were placed in the same conditions and surroundings. One of the pots was watered with water containing these bacteria, and only two germinations resulted, both of which died shortly, while in the other pot watered with pure water, the germinations produced good plants.

Prophylaxis of Malaria.

At Blantyre, a Scottish settlement and mission near Lake Nyassa, in Central Africa, there is published a little paper called *Mission Life and Work*. In an article referring to the ravages of malarial fevers along the common routes of travel—almost wholly by water-ways—the following statement is made: "Twelve grains of quinine with five drops of eucalyptus oil have been taken every third day during a journey lasting three weeks, from Quilimane, at the mouth of the Zambesi, up into the Lake Country; no fever developed at that time or since." The writer believes that the immunity was obtained by this combination of the oil of eucalyptus with quinine, taken at regular intervals. As an anti-malarial combination, in districts where quinine alone does not suffice, this suggestion seems worthy of trial precisely as proposed.—*Journal of the American Medical Association.*

Periods of Infectiousness.

Dr. Arthur Ransome, Owen's College, Manchester, sought to investigate the period of infectiousness of some of the infectious diseases by means of a circular letter sent to the English physicians. The results arrived at are that measles is infectious before the appearance of the eruption (in one case four days before.) The period of communicability extends to thirty-one days after the receipt of the infection. In four cases of scarlet fever the disease was communicated from twelve to twenty-four hours before the appearance of the rash, and in two cases it was communicated six weeks after the beginning of the disease. Mumps was shown to be infectious two weeks after the cessation of the fever, or three weeks altogether. Diphtheria is infectious from the receipt of the contagion until complete recovery, in ordinary cases about thirty-three days. The milder forms of smallpox are infectious five weeks; in the severe forms eight weeks.—*Zeit. f. Schulgesundheitspflege.*

Brains vs. Drugs.

I am sure at the present day we are too likely to forget that the highest position we can take is to cure people by advice rather than by drugs; to make the public pay for the use of our brains and not for so many ounces of physic. Drugs have their own field, but they are our instruments only; of themselves they have no vitality, and a sound common sense—may I say a robust physiology?—has a larger mission even than they in the treatment of disease. There is a time to give drugs, and even to give them with a free hand, but there is equally a time when advice only is needed, and not physic—shall I stop there? No, when to give drugs is quackery! Yes, there are times when to give medicine is to give poison, for it sends the poor patient on a hunt for health, which no physic will procure, and it lets slip the opportunity.—DR. GOODHART.

A Visit to the Pasteur Institute in Paris.

The Institute is quite a fine large building, standing back from the street. On the grass-plot in front is a figure of a boy struggling with a mad dog, in bronze, which typifies at least one branch of the work done in the Institute. We enter a large waiting-room at the side, which contained about sixty patients of all nationalities. I noticed among them two Arabs in their native dress, a Chinese, a Japanese, besides several English people. The treatment is gratuitous only, so rich and poor have alike to wait their turn. The porter took our cards into the professor's room, and in a few moments we were ushered into the presence of the great man. He greeted us very kindly, and after a few remarks called an assistant, who showed us about a bit, and explained the treatment to us. A very careful record is kept of each patient, the state of the dog, site and extent of the wounds, date when bitten, date of commencement of treatment, etc., all being recorded. It seems bites about the face are considered the most dangerous. As a rule, from twenty to sixty injections in all are given, at intervals of a day or two. The strength of the solution is gradually increased as the treatment goes on, the duration of the treatment depending on the site and character of the wounds. The fluid itself is an opaque, milky-looking substance with but little odor. The patients come in in turn, with the clothing about the abdomen loosened, so that a small area of the skin can be reached on either side. The patient is held by and leans on an assistant, as most start when the needle is introduced. The site of the injection having been cleansed with a solution of carbolic acid, about 10 c.c. of the fluid is injected deeply into the tissues with an ordinary large hypodermic needle. As a rule, an injection is given on either side of the abdomen. Pasteur is a small, rather spare man, with a much wrinkled, yet kindly, face, and gray hair. I was surprised to notice that he has very little power over the left side of his body, and that his speech is affected, so that it is difficult to understand what he says. This condition is the result of a "stroke" he had six years ago. The work of the institution is done by assistants, Pasteur being able to do but little.—Paris Correspondent of the *Montreal Medical Journal.*

The Spendthrift Tendency as to Health.

In his excellent work, "Hereditary Health and Beauty," Dr. Shoemaker says: "We examine our canceled checks, add to them those still outstanding, and by comparison of the sum-total with our deposits in bank, carefully cast the balance to find out what still stands to our credit there. But in life, even in robust health, how many carefully reckon up the income and outgo to ascertain what is the balance of endurance left? So far are most reasoning creatures from following such a course, that it is generally enough for persons to be robust for them to consider their capital unlimited. Pleasure, vanity, and a thousand other frivolous notions, induce us to spend lavishly of the greatest of all treasures. The old woman in the fairy tale, with mumbling jaws and rheum-streaming eyes, was eager to exchange all her riches for the poor girl's blooming cheeks and rounded form, and not less eager was the maiden, in ignorance of the value of her priceless possessions, to seal the bargain. But the mutual transfer made, how immediately the maiden saw, from her withered living grave, that all the riches of the earth cannot compensate for the joy that wells in the heart of youth, health and beauty."—*Good Health.*

Stop Spitting.

The modern gospel of prophylaxis teaches that phthisis can be abolished from the face of the earth if only people will stop spitting. Says Dr. T. M. Prudden:

"If the vile and increasing practice of well-nigh indiscriminate spitting goes on unchecked in nearly all assembling places and public conveyances; if the misguided women who trail their skirts through the unspeakable and infectious filth of the street are to be admitted uncleansed into houses and churches and theatres; if theatres and court-rooms and school-houses and cars are to remain the filthy lurking-places of contagia which their ill ventilation and their mostly ignorant and careless so-called cleaning necessarily entail; if in sleeping-cars and hotel bedrooms the well are to follow consumptives in their occupancy without warning, or even the poor show of official disinfection; if in ill-ventilated and ill-cared for dwellings the well must breathe again and again the dust borne seeds of tuberculosis; if no persistent warning is to be given to the ignorant of the dangers which lurk in uncleanliness—then our task will be most complex as well as difficult in limiting the contagiousness of tuberculosis."

Of course cleanliness and plenty of water are necessary; but, after all, it is the expectoration which carries the germ and promotes the spread of disease. Spitting, it seems, is not only a vile, but an increasing habit. This is an unfortunate social fact which reformers do not seem to have grasped, despite its noxiousness. Shall we not have to have a Society for the Prevention of Expectoration—except into sanitary spit-cups? If one could stop the spitting habit, prevent the spread of consumption, and finally stamp it out, he would be greater than a tariff reformer.—*Medical Record.*

SPECIAL REPORTS.

State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania.

PRESIDENT,
J. H. McCLELLAND, M.D., of Pittsburg.

SECRETARY,
BENJAMIN LEE, M.D., of Philadelphia.

PEMBERTON DUDLEY, M.D., of Philadelphia.

J. F. EDWARDS, M.D., of Philadelphia.	GEORGE G. GROFF, M.D., of Lewisburg.
J. H. McCLELLAND, M.D., of Pittsburg.	S. T. DAVIS, M.D., of Lancaster.
HOWARD MURPHY, C.E., of Philadelphia.	BENJAMIN LEE, M.D., of Philadelphia.

PLACE OF MEETING,
Supreme Court Room, State Capitol, Harrisburg, unless otherwise ordered.

TIME OF MEETING,
Second Thursday in May, July and November.

Minutes of a Special Meeting of the State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania.

Held on the train between Williamsport and Erie, Monday, March 28, 1892.

MINUTES OF THE 20TH REGULAR MEETING.

A special meeting of the Board was held on the train between Williamsport and Erie on Monday, March 28, 1892, at 10 A.M. Present, Drs. Groff, Davis and Lee and Mr. Howard Murphy. In the absence of the President, Dr. McClelland, still in Europe, Mr. Howard Murphy was called to the chair. Dr. William B. Atkinson, Medical Inspector of the Delaware was requested to act as Assistant Secretary. An order of business presented by the Secretary was adopted as the order of the day. The Secretary presented notes from Drs. Dudley and Edwards regretting their unavoidable absence. The Secretary presented the minutes of the 20th regular meeting, held at Harrisburg, November 12, 1891, and of a special meeting held at the Executive Office, Philadelphia, February 22, 1892, on galley-slips. On motion of Dr. Groff, the consideration of the minutes was postponed in order to allow the members to read them at their leisure.

REPORT OF SMALLPOX AT POINT PLEASANT.

The Secretary then presented his report, which included the following items:

(1). Smallpox having been reported at Point Pleasant, Bucks County, on the 15th of November, 1891, Medical Inspector Atkinson was at once dispatched to make an investigation. Under instructions from the Secretary, he placarded the house in which the disease existed, called a public meeting of the residents, and, with the assistance of Dr. A. M. Cooper, a resident physician, appointed sanitary, quarantine and finance committee. Day and night guards were established, and Dr. A. M. Cooper was commissioned by the Secretary Deputy Medical Inspector of the Tinicum sub-district, including the townships of Tinicum, Badminster, Plumstead, Buckingham and Soleberry, with full authority to inspect and enforce quarantine. Dr. Alexander, of the Lancaster County Vaccine Farm, was notified to send two hundred points of virus to Dr. Cooper and other physicians in the neighborhood.

The disease was confined to the first case, an Italian, who had come from Trenton, N. J., and an infant in the same house. The authorities of Doylestown were communicated with and recommended to urge the citizens to have vaccination performed.

The chairman of the Directors of the Poor of the County was notified that it was their duty to provide for the necessary expenses of nursing and quarantine, and, should new cases occur, to have them quarantined in the county pest-house.

The action of the Secretary in the appointment of a Deputy Inspector was approved, and, on motion of Dr. Groff, the letter of instruction was ordered to be spread upon the minutes. The letter was as follows:

DR. WILLIAM B. ATKINSON, MEDICAL INSPECTOR, DELAWARE DISTRICT.

Sir: In making your inspection at Point Pleasant, your first step will be to see Dr. Cooper, if possible; then to visit the house and placard it, after verifying the diagnosis. The more influential citizens should then be assembled, and Sanitary, Finance and Quarantine Committees appointed. The Sanitary Committee will have charge of cleaning up and disinfecting throughout the town, and of vaccination. The State Board of Health will furnish virus, but can assume no other expenses. The Quarantine Committee will appoint day and night guards, and allow no one to go in or out of the infected house except the physicians. They will provide food and medicine at the expense of the village, if the family of the patient or patients cannot afford it; for all quarantined persons who will make known their needs through a selected spokesman by word of mouth, no letter or other piece of paper being allowed to pass outside the lines. A vacant house should be selected, to which those exposed in the infected house, but not sick, can be removed for observation, only those necessary for the care of the patient remaining. Persons thus under observation should be detained (18) days. In case of one of them being taken sick with this disease, or any other person in the village being so taken sick, such person must be removed to the house in which the present case now is, which will be the quarantine hospital. If, however, there is a smallpox hospital connected with the County Almshouse, it is the duty of the directors of the poor to have all new cases removed to that building and properly cared for at the expense of the county. All persons known to have been exposed to the contagion must be vaccinated first, and later the entire population.

The Finance Committee will proceed at once to raise funds to meet the necessary expenses. If an additional case occurs it will be necessary to procure a nurse. The physician will make no unnecessary visits within the lines, but will keep himself constantly informed by verbal communication with the nurse of the condition of the patient. After leaving the house he will make a complete change in his clothing and take a disinfectant bath, before visiting any other patient.

The circular of the Board on Precautions against smallpox should be placed in every family by the Sanitary Committee. Until the Quarantine Committee have selected the guards, you are authorized to assign the duty of watching the house to the town constable. The guards will wear the badge of the State Board of Health, and are authorized to arrest and return to the house any person or persons endeavoring to escape therefrom, and to use such force as may be necessary to accomplish this object. You will inform yourself of the distance of all neighboring towns and villages, and of the frequency of communication between them and Point Pleasant. You will immediately report to this office, upon your return, the number of persons sick, the probable number exposed, the number of inmates of the infected house, the population of the village, the names of railroads passing through or near it, and the number of persons vaccinated up to the present time.

Yours very truly,

(Signed) BENJAMIN LEE, Secretary.

SMALLPOX AT MORRISVILLE.

(2) Request was received from the Burgess of Morrisville, Bucks County, for the assistance of the Board in dealing with a case of smallpox in that borough, November 25, 1891. The inspection was at once made by Medical Inspector Atkinson. He found the house already placarded by order of the Burgess, a professional nurse engaged, a guard posted and vaccination being thoroughly performed. Instructions were sent to the Burgess as to the enforcement of precautions in detail, and also with regard to the steps to be taken should other cases occur. Fortunately this was not the case, as there was no further development

of the disease. It may be stated that the individual who was the cause of so much annoyance and expense, although doing business in Trenton and aware of the prevalence of smallpox, had stubbornly refused to be vaccinated. It was a pleasure to the Secretary to find a Burgess so thoroughly alive to the responsibility resting upon him and so intelligent in its discharge.

PIGGERY NUISANCE AT WEST LAUREL HILL.

(3) Complaint having been received of the existence of a nuisance in the shape of a piggery near West Laurel Hill Station, just outside the limits of Philadelphia, maintained by a garbage collector of the adjoining district in Philadelphia, communications were addressed to the Board of Health of that city and to the Street Commissioner, as well as to the collector himself, with the result of the prompt abatement of the nuisance.

SEWERAGE AND DRAINAGE OF POTTSTOWN.

(4) At the request of prominent citizens of Pottstown, Montgomery Co., Medical Inspector Atkinson was instructed to visit that town and investigate the condition of its sewerage and drainage.

His report showed a lamentable and disgraceful absence of all proper arrangements for sewerage, dependent in part, as claimed by the borough authorities, on the fact that the borough had already reached its limit of bonded debt.

The report, after being submitted to Mr. Howard Murphy, Chairman of the Committee on Water Supply, Sewerage, etc., was placed in the hands of the complainants for their information.

INSTRUCTIONS TO CITIZENS OF GREENCASTLE.

(5) Medical Inspector R. L. Sibbet, in concluding his inspection at Greencastle, Franklin Co., had issued a series of recommendations to the borough authorities and citizens, which were printed at the expense of the borough, and are herewith submitted.

NUISANCE FROM APPLE POMACE AT CHAMBERSBURG.

(6) A somewhat unusual complaint was that received from Chambersburg, Franklin Co., of a nuisance in the shape of the refuse from a large cider mill, constituting what is known as apple pomace.

The Secretary, considering that Prof. Groff was probably better acquainted with the manufacture of cider and its resultants than himself, submitted the question to him as to the probability of disease resulting from this source. His reply sustained the position taken by the owner of the mill, himself a chemist and physician, who claimed that the acids developed by the process of fermentation would be destructive of disease germs rather than productive of them. The proprietor maintained that the attempt to remove this fermenting mass during hot weather would create a greater nuisance than its treatment with quicklime which he was pursuing and promised to remove it as soon as the weather would permit.

SCARLET FEVER AT ARDMORE.

(7) Medical Inspector Atkinson reports an inspection of a house in which scarlet fever occurred at Ardmore. The house was placarded, circulars were left, and inasmuch as a public funeral had recently been held of a child dead of that disease, circulars on the danger of public funerals in such cases were also sent to the clergy of St. Denis, by whom the funeral was conducted, and to all the clergy of that neighborhood, also to the resident physicians. The complaint was received in this instance from Dr. Edwin C. Town, Special Inspector of the State Board of Health for the Pennsylvania Railroad Co.

DIPHTHERIA AT LOCUST GAP.

(8) The long-continued and fatal prevalence of diphtheria at Locust Gap, Northumberland Co., led the Secretary to appoint Dr. B. F. Bartho, of Mount Carmel, Deputy Medical Inspector of that township.

The Secretary is glad to be able to report that Dr. Bartho has justified the appointment by organizing a local Board of Health, which has gone to work with great vigor, cleaning up the place, improving drainage, abolishing public funerals, quarantining and disinfecting, with the result of at once materially diminishing the number of cases.

The Secretary requested the confirmation of Dr. Bartho as Deputy Medical Inspector. On motion of Mr. Howard Murphy, the action of the Secretary was approved and the appointment confirmed.

DISINTERMENT OF BODIES DEAD OF SMALLPOX.

(9) The Secretary had granted permits for the disinterment and removal of the remains of the following persons dead of smallpox, under the following precautions, namely, when within six inches of the coffin the ground to be saturated with a strong solution of quicklime, the coffin to be at once placed in a hermetically-sealed casket or box with metallic lining, no persons to be present except those actually concerned in the work of disinterment: Mrs. James Halligan, from Clarion Junction, to Sartwell, McKean Co., transportation to take place in an undertaker's wagon and to avoid all towns; Susanna Penrod, from Westmont, a quarter of a mile from Johnstown, a private burial-ground, to the Grand View Cemetery of Johnstown; William McFall, from one grave in the cemetery of Tarentum to another grave in the same cemetery. The action of the Secretary was approved.

DIPHTHERIA AT ERIE.

(10) On the 6th of January the Secretary received the following telegram from Dr. A. A. Woods, Health Officer of Erie, Medical Inspector of the Lake District: "Telegraph power to close schools here; diphtheria epidemic; come if I telegraph to-morrow; explanation in post." To this the Secretary replied: "Close such schools as you consider necessary to check epidemic of diphtheria." At the same time the Secretary wrote Dr. Woods advising a conference between himself and the school directors, and that he should endeavor to persuade them, in view of the facts which he could lay before them, to themselves take this step. A letter was received from Dr. Woods January 11, just as the Secretary was leaving to attend a conference of State and Municipal Boards of Health at Chicago, with reference to a sanitary exhibit at the World's Columbian Exposition, inquiring as to the powers of the Secretary during the interval of a meeting of the Board, to which the Secretary replied by wire from Altoona: "Letter received; full powers delegated to me by express regulation." On the 13th of January the following telegram was received from Dr. Woods, addressed to Chicago: "Total cases reported since September, 195. Deaths—October, 10; November, 11; December, 25; January, 15; week ending December 19, 7; week ending December 26, 9; weeks ending January 2 and 12, 8 each. Eleven new cases reported January 10, 11 and 12, all in new houses. Have 28 houses placarded, containing 44 cases. I proposed to Committee to close buildings having pupils sick; they refused. Papers condemn the School Board; majority of papers support me. Lawyer advises peremptory mandamus; court will grant."

As a result of Dr. Woods' wise and energetic action and untiring devotion the epidemic began to decline rapidly, and public opinion was so thoroughly aroused that the attendance on schools, from which cases appeared to originate, almost entirely ceased.

They were thus practically closed and the mandamus was not called for.

Dr. Woods' management of this serious epidemic cannot be too highly commended. The department of public education being a distinct branch of the State Government, having plenary powers of its own, it will readily be seen that the State Board of Health should endeavor, wherever it is possible, to exert its influence for the control of epidemics, rather by acting as an advisory body to that department than by asserting its own authority, which it undoubtedly possesses. The action of the Secretary was approved.

CEREBRO-SPINAL MENINGITIS AT PHILLIPSBURG.

(11). On information that six deaths had taken place from cerebro-spinal meningitis in the town of Phillipsburg, Centre County, Medical Inspector Dudley was instructed to investigate. He was unable to discover any cause for the existence of this disease beyond deficient ventilation. The Secretary addressed a note of inquiry to Prof. Lewis A. Sayre, resident physician of the city of New York some thirty years since, who he remembered had written an interesting report on an investigation into an epidemic of this disease among the fishermen at Long Branch. Dr. Sayre's reply showed that the conditions which he found to exist were almost entire absence of ventilation, the fishermen caulking their windows and every crack through which air could enter, the use of kerosene lamps, which were invariably allowed to burn turned low, and therefore with imperfect combustion, the entire night, and finally, low and innutritious diet.

The Secretary considered that this suggestion of Dr. Sayre's, of the noxious effects of the imperfect combustion of coal oil, was one of considerable importance. On motion of Dr. Davis he was instructed to formulate a circular on the subject of the deleterious effects of burning illuminating oils in bed-rooms during the night and its possible connection with cerebro-spinal meningitis.

POLLUTION OF WATER SUPPLY OF HARRISBURG.

(12.) The attention of the Secretary was called to a discoloration of the water supplied to the citizens of Harrisburg, in a communication from the Mayor of that city, Hon. John A. Fritchey. The subject was referred to Mr. Howard Murphy, C. E., Chairman of the Committee on Water Supply, Drainage and Topography. He visited Harrisburg, conferred with the authorities of the city and of the Water Department and made certain suggestions to them with regard to obtaining their water from a point farther from the shore of the river than the position of the present intake.

In a letter addressed to Mayor Fritchey Mr. Murphy gave careful instructions as to the importance of extreme care to prevent any impurity from entering the bottles into which water was to be introduced for examination. On motion of the Secretary, Mr. Howard Murphy was requested to confer with Dr. Henry Leffmann on the subject of the necessary precautions to be adopted in collecting samples of water for analysis, and after such conference to prepare a set of instructions for this purpose, to be printed and affixed to each demijohn sent out by the Board for the collection of samples.

TYPHOID FEVER FROM MILK SUPPLY AT NANTICOKE.

(13) An epidemic of typhoid fever in Nanticoke, Luzerne County, beginning in the month of October last, was carefully investigated by Medical Inspector Taylor, who arrived at the conclusion that it was caused by polluted milk. The reports from Dr. Taylor and analysis of well water from a well on the dairyman's property were submitted.

TRANSPORTATION OF BODIES DEAD OF DIPHTHERIA.

(14) In accordance with the instructions of the Board, the resolution announcing the modification of the regulation regarding the transportation of dead bodies, so as to forbid the transportation of bodies dead of diphtheria had been sent to all local boards in Pennsylvania, to all railroad companies in Pennsylvania and to all State Boards of Health. The leading railroad companies had issued circulars to their agents embodying the new regulations, copies of which were presented.

In the absence of health authorities in nearly all small towns, the Secretary had found it necessary to authorize burgesses and justices of the peace to issue transportation permits. On motion the action of the Secretary was approved.

ABSTRACTS OF REPORTS OF LOCAL BOARDS.

(15) Abstracts of annual reports of the following cities and boroughs were presented: Carbondale, Chester, Johnstown, Lancaster, Phœnixville, Scranton and Titusville. They were ordered to be printed in the Annual Report.

CONFERENCE OF STATE AND MUNICIPAL BOARDS OF HEALTH.

(16) In accordance with a resolution adopted at the last meeting, the Secretary had invited and attended a conference of State and Municipal Boards of Health at Chicago with a view to formulating a definite plan for an exhibit of official sanitary work in the United States at the Columbian Exposition, and submitted the minutes thereof.

ANALYSIS OF LARD COMPOUND.

(17) A specimen of "lard compound" had been submitted to the Board for analysis by the Scranton Board of Health. Dr. Leffmann made the analysis and found nothing deleterious in the article. It contained a considerable proportion of cotton-seed oil.

ACT OF CONGRESS TO PREVENT FOOD AND DRUG ADULTERATION.

(18) A copy of the bill now before Congress to prevent the adulteration of food and drugs was presented; and the Secretary was requested to address a note to Senator Paddock, who introduced the bill, endorsing his effort.

The Board at this point in the report, on motion, took a recess for dinner.

The Board reassembled at 2 P.M., and the Secretary proceeded with the presentation of his report.

OPENING OF THE LABORATORY OF HYGIENE OF THE UNIVERSITY OF PENNSYLVANIA.

(19) The opening of the Laboratory and Institute of Hygiene of the University of Pennsylvania had been attended by the Board, which was represented on the programme in the person of its Secretary. The occasion was one of great interest, and was attended by large numbers of influential citizens.

MEASURES TAKEN TO PREVENT THE SPREAD OF TYPHUS FEVER IN THE STATE.

(20) Immediately upon the discovery of typhus fever in the City of New York, due to the arrival of Russian immigrants on the steamer "Massilia," through the courtesy of the Secretary of the New York State Board of Health, the names and special destinations of each individual ticketed to Pennsylvania were furnished to the Secretary. Fifty-two names were sent destined for eleven places. These were forwarded at once to the authorities of each place, with the necessary instructions, and within a week information had been received that every one had been located and was under observation. One case of typhus only had developed outside of Philadelphia, and that was at Pittsburgh. A suspected case at Bristol was investigated by Medical Inspector Atkinson, who pronounced it one of indigestion.

INVESTIGATION WITH REGARD TO LEPROSY IN THE UNITED STATES.

(21) Copies of the resolutions adopted at the last meeting with regard to the spread of leprosy in the United States, and the necessity for the National provision for the care of sufferers from that disease, had been sent to the President of the United States and the Supervising Surgeon-General of the United States Marine Hospital Service.

The Secretary had also visited Washington and conferred personally with the latter official on the subject, who would recommend it to the attention of Congress in his forthcoming report.

Circulars on this question had been sent to all State Boards of Health and to all prominent specialists in skin diseases, and numerous replies had been received showing that very general interest was being awakened in the matter.

DEDICATION OF THE CONEMAUGH VALLEY HOSPITAL.

(22) An invitation having been received for the members of the Board to attend the dedication of the Conemaugh Valley Memorial Hospital at Johnstown, the Secretary had replied and submitted his letter.

EXTENSION OF INTERSTATE NOTIFICATION TO MEXICO.

(23) A communication was read from Dr. Irving A. Watson, Secretary of the American Public Health Association, suggesting the extension of the system of Interstate Notification of Infectious Diseases to the Republic of Mexico. At the suggestion of Mr. Howard Murphy, C. E., the Secretary was, on motion, instructed to address a communication to the Superior Board of Health of Mexico, notifying it of the willingness of this Board to enter upon such an arrangement.

NOTIFICATION OF ARRIVAL OF INFECTED SHIPS AT THE PORT OF NEW YORK.

(24) On the 16th of February the Secretary addressed a communication to the United States Commissioner of Immigration at the Port of New York, Hon. John B. Weber, requesting that immediate notification should be given this Board of the arrival of any vessel having infectious disease on board, on which were immigrants destined for points in that State. On the 18th of February a courteous reply was received acceding to the request. The first list was received February 21. Since then notifications have been received as follows: February 26, March 1, 2, 5, 6, 15, 16, 18, 23 and 25. It will convey some idea of the immense tide of immigration which is pouring into this commonwealth when it is stated that the steamer "Darmstadt," arriving March 24, brought 400 immigrants for Pennsylvania alone. The Secretary has notified the Commissioner that in future it will not be necessary to report measles. Information thus received is at once sent to the local authorities, who thoroughly appreciate the vigilance of the State Board in thus warning them of the possible approach of infection.

COMMUNICATION FROM THE BOARD OF HEALTH OF BALTIMORE WITH REGARD TO MEMBRANOUS CROUP.

(25) Information had been received from the Board of Health of Baltimore that the body of a child had been brought to that city having a permit from the Board of Health of Lancaster, Pa., stating that it had died of "membranous croup, which is a non-contagious disease." The Baltimore Board of Health desired to know if this was the rule of our Board. The Secretary replied that our Board had, two years ago, classed membranous croup with diphtheria as a contagious disease, and notified all local boards of this action. It was possible that the Lancaster Board was not in active existence at that time. He therefore moved that Dr. Davis be a committee to confer with the Lancaster Board, urging upon it the importance of subjecting membranous croup to the same restrictions, in every particular, to which diphtheria was subjected. It was carried.

DIPHTHERIA AT SPRINGFIELD; APPOINTMENT OF INSPECTORS.

(26) The two Justices of the Peace of Springfield, Delaware County, had waited upon the Secretary to notify him of the existence of diphtheria in that township, and of the reprehensible carelessness of the undertaker of that place in regard to the disposal of infected articles. In order to ensure the enforcement of proper precautions the Secretary had commissioned the Justices—namely, Richard Young and William H. Newlin—as Deputy Inspectors of the Board for the Springfield District for the space of two months, beginning December 1, 1891, with authority to enforce Section 18, Sections 34 to 38, and Sections 46 to 48 of the model ordinance. The action of the Secretary in the appointment of the above-named deputy-inspectors was approved.

LEGAL OPINION ON INTERFERENCE OF PUBLIC AND PRIVATE NUISANCES.

(27) A decision having been submitted to the Board to the effect that participation in a public complaint of a nuisance debarred an individual from bringing a private suit for damages, it was referred to Alfred Lee, Esq., Attorney, for an opinion. The opinion sustained the decision of the judge.

DECISION OF THE SUPREME COURT IN REGARD TO POLLUTION OF WELLS FROM GAS WORKS.

(28) In the case of Collins *v.* the Chartiers Valley Gas Company, Justice Williams affirmed the judgment of the lower court, to the effect that the company was liable for damages for the pollution of wells by salt water, because it had been shown that no proper precautions had been taken to prevent such pollution by its operations, although it was well known that such pollution was likely to occur.

LEGAL OPINION IN REGARD TO THE RIGHT OF THE BOARD TO PURCHASE AND CONDEMN A DAM.

(29) In the case of a dam which had been pronounced by Medical Inspector Free to be a cause of malarial disease at Punxsutawney, the Medical Inspector had suggested that the

Board should condemn the dam and then purchase it and destroy it. The Secretary had referred the question to Alfred Lee, Esq., Attorney, whose opinion was that the Board had no authority to purchase and hold real estate, although there was no doubt of its right to condemn the dam. The authorities of the town were the proper persons to make the purchase.

DIPHTHERIA AT HORTON CITY.

(30) Information having been received of the existence of diphtheria at Horton City, Indiana County, Medical Inspector Free investigated the matter, on the order of the Secretary, and found it unnecessary for the Board to interfere.

COMPLAINT OF A CESSPOOL NUISANCE AT ARDMORE.

(31) A complaint of a nuisance from a double cesspool in the neighborhood of Ardmore, owing to the fact that one of the parties refused to pay his share toward having it cleaned, had lapsed for the want of the proper number of signatures.

SCARLET FEVER IN A PUBLIC SCHOOL AT ELDRED.

(32) The President of the Board of School Controllers of Eldred, McKean County, had written, saying that there was an epidemic of scarlet fever in the village, and that medical opinion was divided as to the period during which a case was infective. The Secretary had replied that it was dangerous from the first moment, but that the infection was most virulent during the period of desquamation or peeling. Hence the necessity for at least six weeks' detention from school.

SMALLPOX IN PHILADELPHIA.

(33) Two cases of smallpox had occurred in Philadelphia in January. They had been properly guarded by the city Board, and the infection stamped out. The Secretary had notified all other Boards in Pennsylvania, and the other State Boards, of its existence.

NATIONAL CONFERENCE OF STATE BOARDS OF HEALTH AT LANSING, MICHIGAN, JUNE 6, 1892.

(34) A communication was presented from Dr. C. O. Probst, Secretary of the National Conference of State Boards of Health, informing the Board that the Conference would be held at Lansing, Michigan, June 6 and 7, and requested the presence of the Board, or a delegate, at the meeting; also requesting the Board to formulate one or more questions or propositions for discussion, and to name persons to participate in the same. In reference to the latter request the Secretary had suggested the subject of "Action by the National Government for Protecting the Purity of Streams."

On motion of Dr. Davis the Secretary was appointed a delegate, with expenses paid as usual, and it was ordered that credentials be supplied to any other member of the Board desiring to attend.

MEETING OF THE AMERICAN PUBLIC HEALTH ASSOCIATION AT MEXICO.

(35). In regard to the meeting of the American Public Health Association, to be held in the city of Mexico, November 30, 1892, it was decided that any member desiring to attend should be furnished with credentials, but that the meeting being in a foreign country, the Board could not be responsible for the expenses of such attendance.

INTERMENT OF SMALLPOX CASES AND WATER-SUPPLY OF CLARION JUNCTION.

(36). At the last meeting of the Board the question had been raised whether the place of burial of the smallpox victims at Clarion Junction, Elk County, was so situated as to endanger the purity of the water-supply. The Secretary had found, upon careful inquiry, that all the houses had water piped to them in an iron pipe from a spring high up on the mountain, so that pollution was impossible.

FORMS OF EASTON SCHOOL BOARD FOR CONTAGIOUS DISEASES.

(37). The excellent forms of the Easton school board for reporting infectious diseases and excluding the latter from schools were submitted.

On motion of Dr. Groff it was ordered that these forms be added to circular on School Hygiene, No. 2, in the next issue.

SCARLET FEVER IN PUBLIC SCHOOL AT STEWARTSTOWN.

(38). A female teacher of a public school at Stewartstown had complained that the father of one of the pupils, who had recently had scarlet fever, had insisted on his attendance and inquired what the law was on the subject. The Secretary had replied that the entire authority was in the hands of the school board, and sent copies of the School Hygiene circulars and of the Model Ordinance.

DIPHTHERIA AND "FAITH CURE."

(39). The Secretary of the Board of Health of Lancaster had called the attention of this Board to the fact that two children had recently died of diphtheria in the county of Lancaster without medical attendance, their parents being believers in the "Faith Cure," and that in both instances public funerals had been held. The Secretary had replied that the Legislature had failed to respond to the urgent request of the Board to forbid public funerals in contagious diseases. The Board had, therefore, issued a regulation itself, forbidding them, but could not attempt to enforce it until it had been published in a newspaper in every county-town in the State. This would necessitate an expense which the limited appropriation of the Board did not at present warrant.

DIPHTHERIA AT OGONTZ—APPOINTMENT OF DEPUTY INSPECTOR.

(40). Three fatal cases of diphtheria having occurred in a house at Ogontz, Montgomery county, and other children in the same family being exposed, the Secretary ordered the house to be vacated and disinfected, and the family removed to another dwelling provided for the purpose by charitably disposed neighbors. In order to insure the execution of these orders Mr. Robert Shoemaker, of Ogontz, was commissioned as deputy inspector for a period of six months. The Secretary requested that this appointment be confirmed, which, on motion, was done.

COMPLAINT OF FILTHY TENEMENT AT OGONTZ—APPOINTMENT OF DEPUTY INSPECTOR.

(41). The building next adjoining that in which these deaths took place was the toll-house of the Cheltenham and Willow Grove Turnpike Company. This building was declared by Dr. Ralph Lee Cooper, of Ogontz, to be in a very filthy condition and decayed from age. Its occupant had a large family of children, who were not properly cared for, and the whole condition of the place was, under the circumstances, a menace to the neighborhood. Residents of Ogontz, to the nunber of ten, united with Dr. Cooper in this complaint. Dr. Cooper was commissioned as Deputy Medical Inspector for the Cheltenham District without limit of time. The Secretary asked for a confirmation of the appointment, which, on motion, was granted. An order was served on the Turnpike Company, by Deputy Inspector Cooper, for the vacation and demolition of the toll-house and thorough disinfection and cleaning of the lot on which the house stood.

MALIGNANT DIPHTHERIA FROM AN UNTRAPPED SEWER AT LATROBE.

(42). Fatal cases of diphtheria had occurred at Latrobe, Westmoreland County, following promptly upon the connection of a dwelling-house with a new sewer, without the intervention of a trap. The Secretary had advised the head of the family to prosecute all concerned in the outrage.

INSPECTION OF SCHOOL AT SHENANDOAH.

(43). The Superintendent of Schools at Shenandoah had requested that an engineer be sent up to inspect an unsafe school building, and Mr. Howard Murphy had at once gone to investigate the matter.

POLLUTION OF WATER-SUPPLY OF SCRANTON.

(44). Information had been received from the Health Officer of Scranton, Lackawanna County, of the pollution of the water-supply of that city by a slaughter-house outside of the city's jurisdiction, the Secretary replied that if a formal complaint were made an inspector would be sent to investigate and report. A blank was enclosed for the purpose, but had not yet been returned.

DISPOSAL OF THE SEWAGE OF READING.

(45). An inquiry had been made by an engineer, who had been consulted with regard to the sewerage of Reading, Bucks County, as to what limit of pollution the Board would assign to the effluent which might be permitted to flow into the Schuylkill River. The Secretary had referred the communication to the Committee on Water Supply, Drainage, Sewerage, etc., but had also written to the inquirer that any system adopted should include a subsidence catch-basin, which should strain out all solids, and a filter-bed of sufficient extent and efficiency to notably diminish the number of bacteria.

DEFECTIVE DRAINAGE AT LANSDOWNE.

(46). Ten citizens of Lansdowne, Delaware County, having united in a complaint of improper disposal of the contents of a cesspool, Medical Inspector Atkinson was ordered to investigate, and sustained the charge, but also reported that the entire settlement was greatly in need of proper drainage facilities. An order, forbidding the repetition of the nuisance, was sent.

SMALLPOX AT TITUSVILLE. NECESSITY FOR DISINFECTION OF BAGGAGE OF IMMIGRANTS.

(47) A case of smallpox had occurred in Titusville, traceable to infected baggage from the S. S. "Diana," which arrived at New York, March 5, with smallpox on board. The length of time which had elapsed since the direct exposure of the patient on the ship pointed to that conclusion. The local Board had treated the case energetically and prevented the spread of the disease. This occurrence suggested the importance of proper disinfection of baggage at quarantine stations.

On motion of Dr. Davis, the Secretary was instructed to address a communication to the Health Officer of New York, insisting on the importance of the disinfection of all baggage in steamers on which cases of smallpox, typhus fever, scarlet fever and diphtheria had prevailed, and also that of patients which had been in hospital with contagious diseases. On motion of Dr. Groff, the Secretary was further instructed to introduce this subject at the National Conference of the State Boards of Health.

PRIVATE INSPECTION OF DAIRY COWS IN THE INTEREST OF PUBLIC HEALTH.

(48) Tuberculosis having been comparatively recently discovered to prevail in dairy herds, Mr. George Abbott, an extensive milk dealer of Philadelphia, had made an arrangement for the systematic inspection of his forty-four herds of milch cows by competent veterinarians at stated intervals. This showed how strongly the question of the conveyance of tuberculosis by milk had taken hold of the public mind. The Secretary had replied to Mr. Abbott's communication on the subject, highly recommending the step and urging also systematic inspection of the stables and yards.

PRIVATE INSPECTION AND SLAUGHTER OF DAIRY COWS.

(49) Another incident of great interest in this connection was the slaughter by Mr. J. E. Gillingham, of Villa Nova, of an entire herd of fine Jersey cows, which had been tested by inoculation with Koch's tuberculin and found to be universally infected. The Secretary had been prevented from attending the autopsies, but had delegated Medical Inspector Atkinson to do so and report. Such a sacrifice in the interest of the public health is as commendable as it is rare. The tuberculin test seems to be thoroughly established by the results of these experiments. The Secretary was, on motion of Dr. Groff, instructed to express to Mr. Gillingham the appreciation of his public-spirited conduct by the Board.

CIRCULAR ON DAIRY HYGIENE.

(50) The circular on "Dairy Hygiene," authorized at the last meeting, is nearly completed. Dr. Groff has been actively aiding the Secretary in its preparation by correspondence with prominent dairymen.

DISSOLUTION OF THE BOARD OF HEALTH OF LOCK HAVEN.

(51) The late Secretary of the Board of Health of Lock Haven, Clinton Co., had announced the dissolution of the Board by action of the Councils. The Secretary was instructed to address a communication to the Councils urging them to reconsider their ill-advised action.

On motion, a recess was now taken until 8 P.M.

At 8 P.M. the Board reconvened at the Reed House, Erie, Mr. Howard Murphy in the chair.

On motion of Dr. Davis, Dr. A. A. Woods, Medical Inspector of the Lake District and Health Officer of Erie, was invited to be present as a guest of the Board. The Secretary continued his report, as follows:

DIPHTHERIA AT GREENSBURG.

(52) An epidemic of diphtheria had been reported in Greensburg, but investigation had failed to sustain the report.

LEPROSY IN PHILADELPHIA.

(53) A case of leprosy had recently been discovered in Philadelphia, in the person of a Japanese, living as cook in the hotel kept by the notorious Dr. Paine, of bogus diploma fame. It had been promptly isolated at the Municipal Hospital, and Dr. Paine had been fined for concealing the case.

TYPHUS FEVER IN PHILADELPHIA.

(54) A case of typhus fever had also occurred in Philadelphia, which was likewise promptly isolated. The infection was brought from Worcester, Mass., where the patient had been nursing six typhus cases resulting from the "Massilia" outbreak. The chairman called attention to the fact of the constant presence of typhus in the republic of Mexico, and suggested that the Secretary should call the attention of the National Conference of State Boards of Health to the same. On motion of the Secretary such reference was made.

DRAINAGE OF DEVON INN.

(55) The time for the completion of the improvements proposed in the drainage purification system of the Devon Inn having nearly expired, the Secretary had written to Messrs. Coffin & Altemus, who had assured him that everything had been arranged to the satisfaction of Mr. English, the complainant. The Secretary proposed, however, to have another inspection made at an early date.

IMPROVEMENTS IN DISPOSAL OF DRAINAGE OF STATE NORMAL SCHOOL AT MILLERSVILLE.

(56) The Secretary called upon Dr. Davis to report as to the present condition of the drainage system of the State Normal School at Millersville, Lancaster Co. Dr. Davis reported that the suggestions made by the Board after its visit of inspection had been fully carried out to the satisfaction of the neighbors, of the school authorities themselves and of all concerned.

REPORTED SMALLPOX AT CLARKE'S VALLEY.

(57). Smallpox had just appeared at Clarke's Valley, Schuylkill County. Medical Inspector Weidman had been ordered to investigate, and his report would probably arrive during the meeting.

EMERGENCY HOSPITALS.

(58). Dr. George G. Groff submitted a draft of a circular on Emergency Hospitals. On motion of Dr. Davis, the Secretary was instructed to confer with the Adjutant General of the State with reference to furnishing the Board hospital tents for use in sudden emergencies.

SIXTH STATE SANITARY CONVENTION AT ERIE.

(59). On behalf of the Committee on the Sixth State Sanitary Convention, the

Secretary announced that the arrangements were completed. Dr. A. A. Woods, on behalf of the local committee, submitted the preliminary announcement and the programme. The latter, in an amended form, was now ready for distribution. The Secretary moved that when the Board adjourns, it adjourn to take part in the Sixth Sanitary Convention, and to meet at the call of the Chair or Secretary. It was carried.

CIRCULAR ON THE PREVENTION OF BLINDNESS.

(60). The Board would remember that its attention had been called by the Sydenham Medical Coterie of Philadelphia to the alarming increase of blindness and to the fact that much of it was preventable A communication was now presented from a special committee, of which the Secretary was a member, of the Philadelphia County Medical Society, urging the same subject upon the consideration of the Board in the following terms:

Resolved; That the State Board of Health be requested to memorialize the legislature of this State to pass a law, or to itself adopt a regulation, requiring that all cases of inflamed or reddened eyes of the new-born shall be reported to some health officer or legally-qualified practitioner of medicine within twelve hours of the time the disease is first noticed.

T B. SCHNEIDEMAN, Secretary.

On motion of Dr. Davis, seconded by Dr. Groff, the following preamble and resolutions were adopted:

WHEREAS, It has been brought to the attention of this Board by two important medical societies of the city of Philadelphia, representing a large portion of the medical practitioners of that city, that from one-fourth to one-third of all cases of blindness are due to ophthalmia of the new-born, which is a preventable disease; therefore be it

Resolved, That the following regulation be and is hereby adopted:

REGULATION IV.

Whenever in any city, borough village or place in this State having no health authority of its own, any nurse, midwife or other person, not a legally-qualified practitione of medicine, shall notice inflammation of the eyes or redness of the lids in a new-born child, under his or her care, it shall be the duty of such person to report the same to a legally-qualified practitioner of medicine, within twelve hours of the time when the disease was first noticed.

Resolved, That this Board recommends the passage of a similar ordinance by the councils of all cities and boroughs, having health authorities of their own, or the adoption of a similar regulation by such health authorities.

This concluded the reading of the report of the Secretary, which was, on motion, adopted, and the action of the Secretary as detailed therein approved.

PRESENTATION OF ACCOUNTS.

The next business in order was the presentation of accounts. The Secretary stated that a quorum of the Executive Committee not being present, the accounts had not yet been audited. He therefore moved that the Chair appoint a member to fill the place of Dr. Dudley on that committee *pro tempore*, and that a recess be then taken to enable the committee to sit. It was so ordered and a recess of fifteen minutes was taken.

On reconvening the Secretary presented accounts, vouchers No. 500 to No. 522, inclusive, amounting to $916.53, which had been audited and found correct by the Executive Committee. They were, on motion, approved. The Board then adjourned to meet at the call of the Chair. (Signed) BENJAMIN LEE, Secretary.

The Board met at the call of the Chair, pursuant to adjournment at the Reed House. An informal discussion of the diphtheria epidemic in the city of Erie followed, which was participated in by Dr. A. A. Woods, Health Officer of Erie. The minutes of the previous meeting, copies of which had been placed in the hands of each member at the opening of the meeting, were taken up and a number of verbal alterations were suggested by the Chairman. With these alterations the minutes as read were approved.

The Board then adjourned. (Signed) BENJAMIN LEE, Secretary.

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COMMUNICATIONS.

Typhoid Fever and Impure Milk.*

BY LEWIS H. TAYLOR, M.D.,
Of Wilkesbarre, Pa.

AMONG the different causes of enteric fever, the use of infected milk has long been known to play an important part, and from time to time, in the course of epidemics, cases have appeared whose existence could not be explained on any other hypothesis than that the patients had used milk contaminated with the germs of the disease. A few local outbreaks have been reported in which the source of the disease in nearly all of the cases seemed to be found in the milk supply, but such instances have been rare, and when an extensive epidemic of typhoid is reported, we are generally quite apt to find polluted water playing an important part in its causation. So apt is this to be the case that any inquiry into the cause of a fever outbreak would not be regarded as complete until a thorough inspection of the water supply had been made.

When, however, such investigation shows the chief general cause to be free from suspicion, we naturally turn to the second most frequent cause, and investigate the milk supply of our patients. A history of the epidemic I am about to relate will, I trust, be of sufficient interest to be its own excuse for presenting this paper to your meeting to-day.

Early in the month of October, 1891, a number of cases of typhoid fever appeared in the Borough of Nanticoke, most of them in the upper or best portion, from a sanitary point of view, of the town. New cases appeared from time to time through October and November and into December, but it was not until the epidemic had almost ended that the attention of the State Board of Health was called to the matter, with the request that the same be investigated.

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* Read before the Pennsylvania State Sanitary Convention at Erie.

I received instructions from the Secretary of the Board December 25, 1891, to investigate the outbreak, and report thereon as soon as possible. I began my investigations the next day (December 26), after receiving the order, and on December 28, addressed the following letter to each of the physicians of Nanticoke, asking a series of questions bearing upon the disease in their midst:

"WILKESBARRE, PA., December 28, 1892.

"*My Dear Doctor:* Will you kindly give me, on behalf of the State Board of Health, at your earliest convenience, the following information concerning the prevalence of typhoid fever in Nanticoke:

"*First.*—Have you treated any cases of typhoid fever in Nanticoke since October 1, 1891? If so, how many?

"*Second.*—Please give name, age, sex, residence, date of attack, and result of treatment of each.

"*Third.*—Will you please state what water supply was used by each; whether the public supply or well water? Also the milk supply of each? From whom obtained? Were any of your patients in the habit of boiling their drinking water before using?

"*Fourth.*—What method of disinfecting stools was used, if any?

"*Fifth.*—Was the house connected with sewers? If not, in what way was refuse disposed of?

"*Sixth.*—What is the general sanitary condition of the neighborhood in which the cases occurred?

"*Seventh.*—Did you attend any cases of typhoid in Nanticoke prior to October 1?

"I will consider it a personal favor if you will reply to this at your very earliest convenience. Any other information you may be able to give on this subject will be gladly received.

"Very truly yours,

"LEWIS H. TAYLOR."

From the replies received, I found that Nanticoke had been remarkably free from typhoid fever for a long time previous to October of the year just closed. The first case appeared September 27, and the next after that, October 2. From that time to December 11, there appeared, as shown by the reports of the physicians, forty-nine cases. Dr. Meck also reported having treated a number of "typho-malarial" fever, but none that he could call typhoid.

As stated in the beginning of this paper, whenever an epidemic, limited or extended, of typhoid fever occurs, we first ask the question, "What water did the patients drink?" and if this seems above suspicion, the next question that naturally arises in our minds is, "What was the source of their milk supply?"

Of the forty-nine patients reported, seven used well-water, and forty-two used the public supply taken from Harvey's Creek (See Table I). Of the seven who used well-water, one contracted the disease away from Nanticoke, one was among the early cases in Nanticoke, and the remaining five, judging from dates of their attack alone, would clearly be classed as secondary cases, due no doubt, to contaminated well-water. Whence came the infection of the remaining forty-two cases? Why not from drinking polluted water from the public supply? I find upon investigation that Nanticoke, formerly supplied, as villages usually are, by wells, was for a time largely supplied by water pumped directly from the Susquehanna River, but since 1886, the year following the Plymouth epidemic, the supply has been taken from Harvey's Creek, the outlet of Harvey's Lake, the largest body of water in the State of Pennsylvania. This stream flows, in the main, through a sparsely settled country, a large portion of which is mountainous and wild. Early in January, in company with Mr. Moseley, Superintendent of the Water Company, and Dr. S. L. Holly, of Nanticoke, I followed the stream five miles up from its mouth toward its source. It is a stream estimated to have an average daily flow of 12,000,000 gallons, and in its present state has evidently much above that figure. The reservoir or intake of the water company is situated about two miles from Nanticoke, on the opposite side of the Susquehanna River, and from this point the water is piped to and across the river to the pumping station of the company. Here it enters a receptacle, or well, twelve feet deep by fifteen in diameter, in such manner as to allow all heavy sediment to settle to the bottom. The overflow from this, passes into a second well, and a current of several inches from the top of well No. 1 into well No. 2, and on out into the waste water-way, carries off any light, floating material, such as leaves, sticks, etc., that may possibly have passed through the screens and into the pipes at the reservoir. From the top of well No. 2 the water is pumped through a fine wire screen at the rate of two to two and one-half million gallons a day, up the hill and into a standpipe five feet in diameter and fifty-four feet high. From this it is distributed to the town. The arrangements at the pumping station are most excellent. A constant stream of running water, abundant in quantity, and apparently excellent in quality, is kept passing through the wells before entering the pumps. The wells are cleaned on an average once a month, and any accumulated sediment thoroughly blown out. This, of course, does not necessarily exclude the water from being factor in producing typhoid fever, though it does secure a water supply free from any gross impurities. There are reasons, however, which to my mind exclude the public water supply from a share in causing the present epidemic:

First.—I followed the stream for three miles above the reservoir and examined the location of closets, etc., in reference to contamination from cesspool drainage. For a long distance the stream flows through a narrow valley with precipitous wooded hills on either side, and without any houses or chance for the same near its banks. The first house encountered was at Schooley's saw-mill, about a mile above the dam. Here the closet was probably 200 feet from the stream, and not in a dangerous location. A half mile further up we found, in the neighborhood of Frisbee's mill, six or seven houses, but in all but one, the closets are at a safe distance from the stream. The exception is located fully forty feet away, and is of such a character that no contamination at present need be feared from it. (Its owner promised to use all due diligence to keep it disinfected, and offered to move it if we thought it dangerous.)

The next houses encountered were at Ceasetown, three miles above the reservoir. Here there are ten, and at all of them, strange to say, but one, the closets are at a safe distance from the creek. The exception is at quite a distance from the main stream, but is situated right over a little tributary in such manner that its refuse is constantly washed away into Harvey's Creek. The owner promised to remove it at once. Inquiry showed that there had been no typhoid fever in any of these houses along the stream, nor, as far as could be learned, had there been any cases farther up the valley. I did not follow the creek farther than Ceasetown, but learned from the inhabitants that the houses farther up were very few, and in general are situated back from the stream. Inquiry of the physicians who practice along the valley, did not reveal the presence of any cases of typhoid anywhere along the stream, hence I concluded that in the absence of any positive evidence of contamination, we may at least infer that the water was reasonably pure.

Second.—The large volume of water in the stream at all seasons of the year, and the long distance it flows through sparsely settled country before entering the water company's pipes, would render it a reasonably safe source of supply.

Third.—I find on the western side of the Susquehanna River, viz., at Avondale, Grand Tunnel and the upper part of West Nanticoke, from 100 to 150 families supplied with water from Harvey's Creek, and none of them had typhoid fever during the time of the Nanticoke outbreak.

Fourth.—The Borough of Nanticoke has from nine to ten thousand people who are supplied with water from Harvey's Creek. If the water were at fault, we would reasonably expect the cases of fever to appear all over the town instead of in a limited portion, and especially would we expect all that portion lying along Main Street, and still lower toward the river, which would naturally receive water from the dead or less active portions of the water pipes to be affected equally with that portion of the town situated on the hill; such was not the case.

For the above reasons, I think we may reasonably conclude that the public water supply did not cause the typhoid fever of the past few months.

We turn to the second question, and ask: "What was the milk supply of these patients affected with the fever?

Of the remaining forty-two patients who used hydrant water, we find that thirty-one used wholly or in part the milk supplied by a farmer living three miles above Nanticoke, and there is good reason for believing that many others drank also from the same milk. There is situated in the neighborhood where many of the cases occurred a prosperous drug store, where milk-shake was dispensed during the summer and fall as a popular beverage, and the milk for the same was furnished by the same farmer who supplied the majority of the typhoid fever patients. Several of the local retailers also were in the habit of purchasing milk from the same farm for a portion of their supply.

In the accompanying table I have classified all of the cases reported to me by the physicians of Nanticoke.

TABLE I.—TYPHOID CASES IN NANTICOKE, IN 1891.

NO. IN ORDER OF ATTACK.	AGE.	SEX.	RESIDENCE.	DATE OF ATTACK.	RESULT.	WATER SUPPLY.	MILK SUPPLY.	METHOD OF DISINFECTING.	DISPOSAL OF EXCRETA.	SANITARY SURROUNDINGS.	
1	35	F.	Green St.	Oct. 7.	Died.	Hydrant.	Mr. T. and Mrs. B.	Brom chlor.	Privy.	Bad.	
2	10	M.	Broad St.	" 2.	Recov.	"	Mrs. B.	Carbolic ac.	Buried.	Good.	
3	20	M.	Noble St.	" 4.	"	"		Chlor lime.	Privy.	Fair.	Disease contracted at Winton, Pa.
4	20	M.	Church St.	" 4.	"	"	Mr. O.	"	"	"	
5	15	M.	Green St.	" 10.	"	"	Own cow.	"	"	"	
6	15	M.	Green St.	" 10.	"	"	Mr. T.	"	"	"	
7	8	M.	Prospect St.	" 11.	"	"	Mr. T.	Lime and fe sulph.	Buried.	Good.	
8	14	F.	Green St.	" 11.	"	"		"	"	"	
9	17	M.	State St.	" 12.	"	"	Mr. T.	Carb. ac.	"	"	
10	35	M.	Green St.	" 12.	"	"	Mr. T.	Br. chloralum.	Privy.	Bad.	
11	17	M.	Church St.	" 12.	"	Well.	Mr. T.	None.	"	"	
12	14	F.	Green St.	" 13.	"	Hydrant.	Mr. M.	"	"	"	From Mr. T. occasionally.
13	24	M.	Church St.	" 13.	"	"	Mr. W.	Lime and sulph.	Buried.	Good.	Drank T. milk also.
14	14	M.	Green St.	" 14.	"	"	Mr. J.	" [iron.	"	"	" " " "
15	21	F.	State St.	" 14.	Died.	"	Condensed m.	Br. chlor.	Privy.	Bad.	
16	36	M.	Broad St.	" 14.	Recov.	"	Mr. T.	"	"	"	
17	8	M.	Green St.	" 15.	"	"	Mr. T.	"	"	"	
18	40	M.	Noble St.	" 17.	"	"	Mr. S.	Ch. lime.	"	Good.	Father of No. 3.
19	51	M.	Main St.	" 25.	Died.	Well.	Own cow.	Sulph. iron.	Buried.	"	Cont. disease at Winton, Pa.
20	33	F.	Broad St.	" 26.	Recov.	Hydrant.	Mr. T. and Mrs.	None.	"	Bad.	Part of time Mr. T.
21	20	F.	State St.	Nov. 2.	Died.	"	Mr. T. and B.	Carb. ac.	"	Good.	
22	2	M.	Church St.	" 7.	Died.	Well.	Own cow.	Br. chlor.	Privy.	Bad.	
23	19	F.	State St.	" 5.	Recov.	Hydrant.	Mr. T.	Sulph. iron.	"	Good.	
24	23	F.	Green St.	" 9.	"	"	Mr. T.	Br. chlor.	"	Bad.	Milk also from Mr. M.
25	22	F.	State St.	" 8.	Died.	"	Mr. T.	Carbolic ac.	Buried.	Good.	
26	33	M.	Honey Pot.	" 15.	Recov.	Well.	Neighbor.	Chlor. lime.	Privy.	Fair.	
				" 15.	"	Hydrant.	Own cow.	Chlor. lime.	Privy.	Fair.	Niece of No. 8, and visited his house frequently during his illness.
27	12	F.									
28	30	F.	Main St.	" 15.	"	"	Mr. D. and T.	Br. chlor.	"	Good.	Sup. and part by M[illegible] T.
29	6	M.	Church St.	" 27.	"	Well.	Own cow.	None.	Buried.	"	
30	20	F.	Broad St.	" 28.	"	Hydrant.	Mr. T.	Sulph. iron.	Privy.	"	
31	30	F.	Church St.	" 30.	"	Well.	Own cow.	Br. chlor.	Buried.	"	
32	21	M.	State St.	" 30.	"	Hydrant.	Mr. T,	"	"	"	
33	4	M.	Church St.	Dec. 2.	"	"	Mr. T.	"	"	"	
34	6	M.	Market St.	" 1.	"	"	Neighbor.	Chlor. lime.	Privy.	Fair.	
35	17	M.	Prospect St.	" 1.	"	"	Mr. T.	Lime, etc.	"	Good.	
36	2	M.	Green St.	" 2.	"	"		"	"	"	
37	25	M.	R. R. St.	" 6.	"	"	Mr. T.	Sulph. iron.	"	"	
38	51	F.	Green St.	" 8.	"	"	Mr. T.	"	"	"	
39	72	F.	Green St.	" 8.	"	"	Neighbor.	"	"	"	
40	6	F.	State St.	" 8.	"	"	Mr. T.	Chlor. lime.	"	Fair.	
41	31	F.	State St.	" 11.	"	"	Mr. B.	Lime.	Buried.	Good.	
42	20	F.		Since Oct 1.	"	"	Mr. T.	Chlor. lime.	Buried or privy.	"	
43	20	M.		"	Died.	"	Mr. T.	"	"	"	
44	5	M.		"	Recov.	"	Mr. T.	"	"	"	
45	17	M.		"	"	"	Mr. T.	"	"	"	

In analyzing these cases as tabulated, we find, first of all, that Nos. 3 and 19 contracted the fever at Winton, Pa., and came home to Nanticoke sick with the disease. Hence, in a consideration of the causes of the epidemic in Nanticoke, these two should be ruled out of the list.

No. 18 was father of one of these cases, and came down with the fever thirteen days after his son began. He might possibly be classed among the secondary cases from carelessness in management, though the physician had instructed the family to use chloride of lime as disinfectant.

No. 27 was a niece of this family and frequently visited them during their illness. If the above four be omitted, we have left forty-five cases to be considered; of these twenty-seven were supplied with milk from the above-mentioned farm directly.

Of the remaining eighteen, Nos. 12, 13 and 14 drank milk also occasionally from the same farm.

Two Polish children, Nos. 8 and 36, are reported as, source of milk unknown. It is very difficult for the physician to ascertain all of the facts from some of the foreign population who do not speak any English, as they cannot understand the meaning of the questions, nor the necessity of correct answers in any investigation.

This leaves twelve who are reported as having milk from their own cows, from neighbors or from dealers other than the one above mentioned. Of these, six used well-water instead of the public supply, and four of them are cases in which the origin of the infection may be clearly traced.

Edward C. (No. 11) was clerk in a drug store, where milk-shake was used freely as a beverage. He drank of this milk, which was supplied by the farmer mentioned, and was taken with fever October 12. He lived with his sister, in whose family Nos. 22, 29, 30 and 31 were attacked respectively November 7, 27, 30 and December 2; clearly cases of secondary infection from infected well-water from the introduction into the house of case No. 11. The physician in attendance says the water was gotten from an old well five or six feet deep, just back of the house and in a location to catch all the drainage from the surface under and around the house. In this case excreta were thrown on the surface and in privy vault, and no disinfectant was used until the patient had been ill for some days. If these four should be regarded as secondarily, due to this famer's milk, it would make thirty-five out of forty-three cases, or over 80 per cent., probably due directly or indirectly to the use of this milk.

As to the remaining cases, who are reported as procuring milk of different dealers, it can by no means be asserted that they did not drink of the same, for many people were in the habit of drinking milk at the drug store above mentioned, and may thus have used it without being reported.

An interesting incident is found in the family of Dr. D., who procured his milk from a different dealer. In the hot summer and autumn evenings he frequently went over to a local retailer and purchased a quart of milk as an additional supply. This was drunk before going to bed. His wife was taken ill with typhoid fever, and his mother-in-law, who was staying with them for a time, was also taken ill, went to her home in another town and died of typhoid fever. Inquiry revealed the fact that the milk purchased from the local retailer came from the suspected farm. While it is impossible to say with absolute certainty that the epidemic was caused by milk supplied from this farm, yet the fact that so large a portion of the cases used this milk is sufficient to cast considerable suspicion on the milk supply, and warrant an investigation of the same.

Accordingly, accompanied by Dr. S. L. Holly, of Nanticoke, I visited the place mentioned, had an interview with the owner, looked over his premises carefully, and procured a sample of the water from his well, which I forwarded by Adam's Express to Dr. Leffmann for examination.

I found that Mr. T. kept a dairy of thirteen cows, from which he supplied milk to customers in the borough of Nanticoke, and that he was the milkman supposed by many to have distributed typhoid fever among certain residents of the place. Two years ago a passing drove of cattle halted at his place and pastured on his farm about a week. In about two weeks after his own cows began to be ill, and his whole herd of thirteen died in a short time. This was investigated by the State Board of Agriculture and the disease pronounced Texas fever.

Mr. T. has lived in his present location seven years, and his family has had no serious illness in that time until October of 1891. He was taken sick himself October 4, at the same time the outbreak began in Nanticoke, and was ill with typhoid fever for seven weeks. His son, aged 5, was also taken sick October 4, and ill four weeks. L. S., aged 15, relative in the same house, was taken sick October 7, and was ill for three weeks. Mrs. T., his wife, was taken sick October 11; ill three weeks. C. S., aged 20, a relative who came to the house about one week after Mr. T.'s illness began, was taken sick November 26, and was still in bed, though convalescing at the time of the investigation. These all had well-marked typhoid fever.

Mr. T. and family, with others, have used the water from his well constantly until taken ill, and then the sick ones were supplied with water carried from a spring some distance away. Mr. T. does not know of any typhoid fever occurring previously in this house, and thinks there has been none for twenty-five years, though I afterwards learned from Dr. Dodson, of Nanticoke, that he had taught the neighboring school ten years, and had had typhoid fever from using water of this well, and that others in the neighborhood had the disease at that time. The other end of the farm-house is occupied by another family, who use the water from the same well. At the time of the investigation three of this family were ill, but their attending physician did not pronounce the disease *typhoid fever*. The first of these, G. K., aged 29, was taken ill on Thanksgiving Day; had headache, nosebleed and diarrhœa. He was ill three or four weeks, was then up about four days, and is now down again.

Mrs. E. K. was taken ill November 28 with "inflammatory cold;" sick two weeks; up three or four days, and then "took cold, and a relapse with pneumonia." (?) She is now quite ill, very dull and sluggish, sordes on teeth, dry tongue, etc. These used the well-water until illness began, and since then have used spring-water. In a house a few yards away, a family of three lived, and also used water from this well. None of them were reported as having typhoid. A daughter, aged 20, died October 12, 1891; said to have died of heart disease.

The pupils of a public school, situated a short distance above this farm, were supplied with drinking water, during the day, from the well, up to the outbreak of the fever,but so far as known, none of them contracted the disease.

This local outbreak is of great interest of itself, aside from any influence it may or may not have had on the spread of the disease in Nanticoke, and the query naturally arises, what was the source of this infection? Mr. T. states that none of his family had been away from home for some time, except himself. He had been in Beach Haven about September 1, and stayed two nights, but did not know of any typhoid-fever being there at the time. He sold milk in Nanticoke daily, and drank freely of the water. His wife, who contracted the disease within a week of himself, had not been away at all, nor had his child. The other two, L. S. and C. S., came from Berwick to the farm, and contracted the disease sometime after their arrival. Thus far the origin is obscure. A huckster from Beach Haven frequently passed through this neighborhood and stopped with Mr. T. He was there and spent a night about September 1, and again about September 15. At the time of the latter visit, he was complaining of headache, general aching, lassitude, etc. He went directly home; was immediately taken down with typhoid-fever, and was ill four weeks. It is quite possible that he was commencing with the disease at the time of his visit, and if so, this would serve as the parent case at the farm, the subsequent ones developing early in October.

After the patients had been ill for a short time, a nurse was procured, and the stools disinfected, but previously they had been thrown into the privy, which is situated below the well so far as surface is concerned, and on ground sloping toward the river, and away from the house and well.

The privy is situated 45 feet from the rear of the house, and 120 feet from the well, the ground sloping toward the privy, so that it is considerably below the top of the well. Remarkable circumstance for a house in the country.

Appearances would indicate that the privy would not pollute the well. The latter is twenty-four feet deep, and Mr. T. assures me that he ascertained when draining the well that the water came into it from the opposite side to the privy—*i. e.*, from toward the barn.

A few hundred yards from this well, and on considerably higher ground, is a large cemetery, which is used much more than country cemeteries generally are. It is located in a populous valley, and many of its lots are owned by families who have moved into the adjoining towns, but still bury their dead in the old cemetery. There is a shallow gully or depression in the ground between the farm-house and the cemetery, the ground sloping toward it from either side; but the well, although higher than the gully, is still much lower than the cemetery. The accompanying crude diagram will show the location of the various places mentioned.

The distance from the cemetery to the gully is 357 feet, and from the gully to the well is 230 feet. Over in the cemetery, where the sexton was digging a grave at the time of our visit, the slope of rock was found to be toward the farm-house, and subsequent investigation by digging near the well showed that the same dip continued on the opposite side of the ravine—*i, e.*, toward the well.

The sexton, who has lived within the cemetery grounds for three years, does not know of any recent burials from typhoid fever, except in the month of December last. Of course, it is impossible to say that the well is polluted by the cemetery. We have always thought that burial was one of the safest means of disposal of typhoid-germs; but who can tell how far such may be carried underground when circumstances favor their distribution? Certain it is that this well was contaminated in some way from the fact that so many who drank of its water were affected with typhoid-fever. The following report from Dr. Leffman offers additional confirmation of this suspicion:

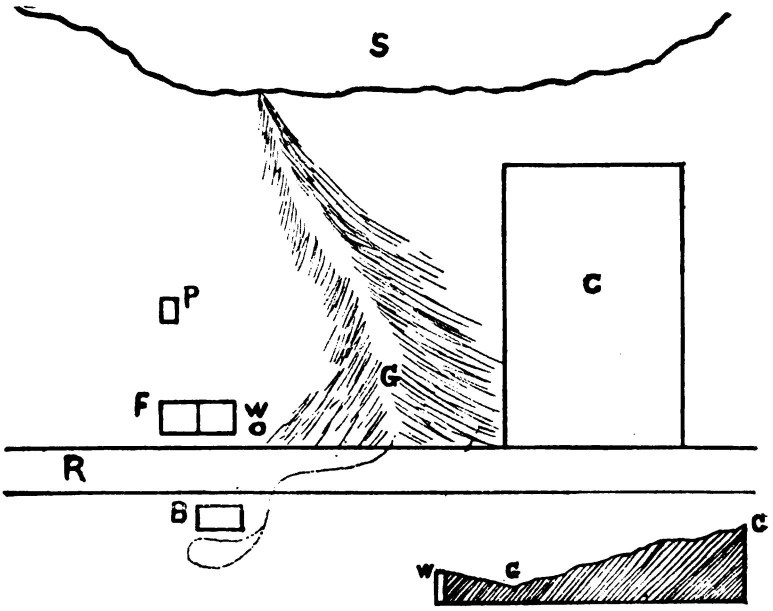

Diagram of slope from cemetery to well.

F. Farm house with two families.
P. Privy, used in common.
W. Well.
B. Barn, the drainage from which is across the road, and eventually in the gully, G,
R. Public road between Walkesbarre and Nanticoke.
S. Susquehanna river.
C. Cemetery.

"Benj. Lee, M.D., *Secretary of State Board of Health of Pennsylvania.*

Dear Sir: "The following are the results of an examination of a sample of water sent by Dr. L. H. Taylor, Wilkesbarre, Pa., marked 'Turner's Well:'"

Chlorine	50.40
Nitrogen as nitrates	12.60
" nitrites	none
" ammonium	0.005
" by permanganate	0.080

Clear and colorless.

"The above results correspond with those usually obtained in the examination of well-waters in populated districts, in which the subsoil water is largely polluted by infiltration of foul matters, but in which the soil is still capable of oxodizing the organic material to the final point—*i. e.*, nitrates. The high figure for the nitrates and chlorides, the low figure for the organic matters and ammonium compounds and the entire absence of nitrites indicate these conditions. Notwithstanding the fact that the ingredients in this water are not positively injurious, I regard it as unsafe for drinking purpose, because of the evidences of previous contamination, which may become at any time too great to be properly removed by the soil action. In addition, the introduction of specific contamination, such as the bacillus typhosus, is liable to occur and distribute the disease among those using the water. All figures in the analysis are in parts per million.

"Yours,

"(Signed) Henry Leffmann."

The water from this well was used by the family without suspicion up to the time of the illness, and also used for washing and cooling the cans which supplied the milk to customers in Nanticoke. When we take into consideration the fact that so many cases of fever were found among families supplied with milk from this farm, that many cases were found at the farm itself about the same time, and that the water of the well was in unsatisfactory condition even so late as January 1, I think we may safely say, that suspicion strongly points to the milk used, as the cause of the outbreak in Nanticoke.

Such was the opinion held by all of the physicians of Nanticoke with whom I conversed on the subject. The following is an extract from a letter received from Dr. D. H. Davis, under date of January 7, 1892. After detailing his case, he further says: "With the exception of G., all of these cases occurred in the southern or hill-portion of the town. Where the sanitary conditions are as good as possible, consistent with the absence of sewers, it is the opinion of the local physicians, myself included, that the epidemic is largely due to the milk supplied by Mr. T. While an analysis of my own cases will not justify such an assumption, the history of the aggregate of the cases, with reference to this point will, I think, do so. Furthermore, it is known that T. has furnished other dealers with milk from his own supply, Among the cases which occurred in town were those of two boys, P. and B., who were employed in a cigar-store beneath my office, and whom I almost daily saw, go to T.'s wagon and drink their fill of milk. They were attacked almost simultaneously with the appearance of the disease in T.'s own family. I did not attend any cases of typhoid-fever during the past summer previous to October 1, and six cases will include all the instances in which I have treated the disease or known of its existence in the town since the introduction of the public water-supply (probably six years) prior to the first of October. I know of but one case having occurred in Grand Tunnel, a boy, who had been abroad previous to his attack. This fact, I think, militates against the assumption that the water-supply was responsible for the appearance of the disease."

Inquiry of physicians and others show that, while the borough is by no means in an ideal sanitary state, yet its general sanitary condition is as good as can be expected without sewers, and was as good in the year just passed as in previous years.

Upon inquiry as to the ice supply, I found that it was furnished by two dealers, who obtained it partly from the Susquehanna River, partly from the Glen Lyon Reservoir and partly from a pond filled by the Nanticoke Water Company. Inasmuch as the supply of ice was general and the epidemic local, it seems impossible that it should have figured in the causation of the disease.

In the absence of any other discoverable cause, in the presence of the fact that typhoid-fever was prevalent in Mr. T.'s own family and that it appeared in so many families of his customers, his well was condemned, and the family ordered to discontinue the use of this water for drinking purposes and for washing milk-cans unless it be previously boiled.

Notes on the Sanitary Condition and Necessities of Pittsburgh.*

BY CROSBY GRAY,

Chief Clerk, Department of Public Safety, Pittsburgh, Pa.

UPON no other single factor does so much of the material prosperity of a community depend as its hygienic condition. It may in all other respects highly commend itself, but if from any cause its sick and death-rate be excessive, it will be carefully avoided and shunned.

The natural elements which are necessary to make up a healthy locality are pure air, pure water, a pure soil, and pure food. These were all originally bestowed in abundant measure by the Creator, but as populations increased, and especially as people congregated in cities and towns, the natural conditions were changed, and in consequence the sick and death-rates were proportionately affected, as the changes were great or small.

The first three natural and essential elements mentioned, are so closely allied, or depend so greatly upon each other, that they may be classed in the same category, and viewed and treated from the same standpoint. Thus, pollution of the soil involves contamination of the air and water; contamination of the water involves that of the air and soil; while that of the air involves, to a greater or less degree, the others.

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* Read before the Penna. State Sanitary Convention at Erie.

The necessity for action looking toward the prevention or amelioration of these conditions was early recognized, and measures were adopted for the preservation of the essential elements in their original purity, so far as possible. One of the earliest enactments of this character was of directly divine origin, delivered through the medium of the "great law-giver," to the Israelites.

In modern times, and especially during the past quarter of a century, the conservation of the public health has largely engaged the attention of the public mind. Numberless investigations have been made by sanitary scientists; hundreds of volumes and essays have been written by many of the most profound thinkers and brightest minds of the age; and thousands of addresses and lectures have been delivered by eloquent orators in furtherance of this laudable purpose. The laborious and painstaking efforts and thoroughly scientific researches of such practical investigators as Pasteur, Koch, Klein, Sternberg and others have created a renewed and increased interest in the subject, and marked a new and important era in its history.

The discovery and development of the fact that many, if not all diseases, and particularly those classed as zymotic or infectious, are due to the presence of specific germs or micro-organisms, which have their origin in, or are propagated by a contaminated and unwholesome condition existing in the essential elements before referred to, has opened a new and fertile field for investigation, and rendered many of the former theories and methods of sanitation comparatively valueless.

Do the abnormal and dangerous conditions referred to prevail or exist in the city of Pittsburgh?

A careful study and analysis of the reports issued by the Bureau of Health during several years past show that while the general mortality of this city compares favorably with that of most others, yet that resulting from acute infectious diseases, embracing diphtheria, scarlet-fever and typhoid-fever, is considerably higher than that exhibited in many other and probably less favorably situated cities, when considered by the standard of natural advantages, and originally healthy site and surroundings.

The average annual death-rate from acute infectious diseases during the past eighteen years has been about 21 per cent. of the total. Of this amount 14 per cent. was due to diphtheria, typhoid-fever and scarlet-fever, which prevailed in the order named.

That the peculiar conditions necessary to the causation or propagation of these diseases exist to some extent, at least, and in certain localities, is evident. Typhoid-fever and diphtheria for a number of years prevailed to an almost alarming extent in the district locally known as the "South Side," embracing that portion of the city lying south of the Monongahela and Ohio rivers, and comprising the 24th to the 36th wards inclusive.

Several investigations made, seemed to point conclusively to a contaminated public and private water-supply; a polluted soil resulting in part from those abominable relics of the past, privy-wells, defective plumbing and sewerage, lack of thorough isolation of the sick, and disinfection of premises and surroundings, as the most probable and effective agents in the causation of these diseases.

Within the past four years, however, both of these diseases have changed their *habitat* from the South Side to the East End district. The reasons for their forsaking the former district may not be quite perceptible, as at least some of the direct or predisposing causes continue to exist, although at present they appear to be in a sort of quiescent condition, but are ready, with a little encouragement, to again assert themselves. One of the most probable reasons, however, for the recent immunity from these diseases in the district referred to, is the improved and extended system of sewerage which has been inaugurated within the past few years.

Most of the causes for the existence of the diseases referred to on the South Side may also be found in the new and later scene of their activity, viz. : The East End district. This district includes the better residence portion of the city, and is composed of the 13th to the 23rd wards inclusive. Imperfect drainage and sewerage, and the use of the old style privy-well, both of which insure pollution of the air and soil, are the producing causes in some sections, while in others a contaminated water-supply is doubtless the reason for their existence. The impure water-supply referred to is that obtained from wells and springs, the use of which is resorted to during the season of freshets in the river from which the public supply is obtained, and which is thus rendered unpalatable, while that obtained from the wells is regarded as greatly preferable on account of its being clear and cold, although it most likely is charged with the poisonous leachings from the surface, old and leaking drains, and the ubiquitous privy-well. The use of water from springs and wells is also compulsory in portions of this district, which are sparsely settled, on account of the entire absence of a public supply.

The subject of better drainage and sewerage for this district has received quite an impetus during the past few years, and it is hoped and believed that, with the completion of the extensive system contemplated and now in course of construction, the hygienic condition of the district will be greatly improved.

What of the fourth essential element necessary to good health, viz., pure food ? It cannot be doubted that Pittsburgh, in common with most other communities, suffers from the use of unwholesome and adulterated food. Avarice provides the product, or material, while ignorance, poverty, and a mistaken economy furnishes the market therefor. It is to be regretted that this subject has not engaged the public mind to the extent which its importance demands. It is with pleasure we note the fact, however, that this question was considered by the Legislature at its recent session, and that it is likely to be again at the next one, when it is hoped that some effective legislation will be enacted which will insure a proper remedy.

In this connection it may be remarked that the enactment of a law a few years since, prohibiting the manufacture and sale in this Commonwealth of "oleomargarine," one of, if not the least harmful of any of the adulterations of, or substitutes for pure and natural food, was unwise and unjust, however honest the motives which induced its adoption may have been. Oleomargarine is a valuable food stuff. While probably not equal to the best grade of butter, it is certainly much superior to the poor and rancid butter which is so generally sold in our cities. One of the greatest dietary needs of the workingman is a sufficient supply of an inexpensive, wholesome fat. This necessity could be largely met by the use of this artificial butter.

As somewhat analogous and incidental to this question, the repeal of the law providing for the appointment of sealers of weights and measures in the several counties of this Commonwealth, might be referred to. That the citizens of this State are being daily defrauded to the amount of thousands of dollars, by unscrupulous and avaricious dealers in the necessaries of life, and especially food-supplies, on account of the lack of this wholesome check, is evident, or can be made so, to the careful observer. It is to be hoped that both these enactments will be speedily repealed in the interest of good health, as well as honesty and good morals.

Having thus briefly, and probably in a very unsatisfactory manner, set forth the insanitary conditions which exist in some portions of Pittsburgh, let us as briefly refer to a few of the sanitary necessities which should be considered and acted upon in order to insure to that community an improved condition of health.

The *first* necessity is a pure water-supply. This can be secured to the districts which now suffer for lack of it, by the extension of the city system, which thus far has succeeded in furnishing at least a comparatively good potable water. The experiment of sinking artesian wells, has recently been tested in one section of the South Side District, and proved to be successful, an excellent quality of water having been obtained at a depth somewhat exceeding 100 feet. This, if carried out to a conclusion, would doubtless do much toward solving the problem in that district.

The *second* necessity is the abandonment, by compulsory means, if necessary, of the use of water-wells, at least in the more densely populated sections. While it may be true that the water obtained from all of these, and at all times, is not unfit for drinking purposes, yet the fact remains that none of them are, like Cæsar's wife, "above suspicion." The risk of contracting disease through this medium is too great and frequent to be longer tolerated.

Third.—The further extension of an improved sewerage system in the East End and South Side Districts especially. This would, of course, be attended with considerable outlay of money, but if viewed from a financial standpoint alone, it should be borne in mind that the average cash value of a human life, as computed by competent authority, is about thirteen hundred dollars, which amount, if multiplied by the number of lives which could be saved to the community, saying nothing of the value of the thousands of days lost by the attendant sickness, would, in a surprisingly short time, pay the entire cost of an elaborate system of sewerage and drainage for the entire city.

Fourth.—Better methods of construction and inspection of plumbing and house drainage. There is probably greater danger, to health and life, from faulty plumbing and imperfect trapping and ventilation, than from almost any other source. This is due, in a great measure, to the employment of incompetent or careless workmen, and the use of inferior material. The use of material below the best grades should be prohibited. Persons engaged in this important branch of sanitary work should be required to undergo an examination at the hands of competent authority, and only those who satisfactorily pass said examination should be permitted to perform such work. Then the inspection of plans, work and material should be rigid, and embrace every detail. This inspection should include not only new work and material, but old as well. The employment of a single Inspector, as at present, falls far short of the necessities of the case.

Fifth.—The abandonment of the old privy-well wherever it is possible to connect with sewers. This should also be made compulsory, and should not only involve their disuse, but the prompt removal of the contents, together with that of the contaminated soil surrounding it for a diameter and depth coextensive with the pollution, and the filling of the excavation thus made, with pure earth, and the application of disinfectants. Where sewer connections cannot be made, the dry-earth closet *might* be used to advantage in many cases. In lieu of this, shallow wells should be constructed, not more than eight feet in depth and of a convenient diameter. These should be lined with hard burned brick, laid in cement, and both inside and outside surfaces thoroughly cemented. The contents should be removed frequently, and by means of a pump or other similar inoffensive appliance.

Sixth.—A better system and method of collection and disposal of waste material, garbage and offal. At present the collection of this material is a matter of private enterprise, conducted in a sort of slip-shod manner by means of appliances crude and unsuited for the purpose, and at least in some instances by irresponsible parties. Some of it is delivered at the single garbage furnace owned and operated by the city, while the balance and larger portion is deposited in the rivers, on vacant lots, or other not less objectionable places.

It should be collected and removed daily during the heated term, and three times per week during the balance of the year, either under contract between the city and proper persons and paid for by general taxation, or by the municipality itself, it owning the teams and apparatus. The removal should be made by means of properly sealed iron tanks, mounted on two oı four wheels. Additional furnaces should be erected, or other proper means and appliances provided at convenient points, where it could be promptly disposed of in an inoffensive manner.

Seventh.—More thorough and scientific inspection of the food-supply. That unwholesome and adulterated food plays an important part in the causation or propagation of disease, at least by means of an impaired vitality resulting from its use, there can be no doubt. The means of detection should be at all times at hand, and the punishment swift and sure. To do this, the aid of the chemist and microscopist are indispensable. The methods now in use in Pittsburgh fall far short of the ideal and necessary means to accomplish the end in view. On account of a lack of funds for securing the proper appliances, and the employment of fitting talent for the prosecution of this important work, the inspection of food has been confined to a few commonplace articles of every day use, and conducted in a very superficial manner. The employment of one meat and milk inspector and an inspector of vegetables, is the sum total of the protection from imposition of this character afforded a city of more than a quarter million of inhabitants.

Eighth.—More complete isolation of those suffering from infectious diseases. The law now existing and applicable to the sanitary care and treatment of smallpox should be made applicable to diphtheria and scarlet-fever. Houses in which these diseases exist should be placarded and guarded, so as to prevent any chance of the intermingling of the community outside, with those inside the infected premises or family. These precautions should also be required of those residing in the same family or house in which the disease exists. If need be, the inmates should be fed and clothed at the public expense until all danger of infection has passed away. It will be found much more economical to do so, when it is considered that while smallpox, which is so much dreaded, and yet so easily prevented, kills only scores, and at long intervals the diseases mentioned are ever present with us, and count their victims by the thousand.

Ninth.—Proper sanitary regulations governing the care and burial of the bodies of victims of infectious disease. The tender ties of relationship and sympathy for the sick are sundered by death, and should thenceforth be wholly extended to, and manifested for the living. In furtherance of this object, the body should be at once thoroughly disinfected and placed in the casket, which should be securely closed and not again opened, unless special permission be granted by the health authorities. The funeral should be strictly private, and attended only by the immediate relatives, none of whom should be children.

Finally.—Thorough and scientific disinfection of persons, clothing, houses and surroundings should be practiced. The methods of disinfection now in use are antiquated, and their application quite too superficial. They are relics of the time when the substitution of one odor for another was regarded as the *ne plus ultra* of disinfection. As previously referred to, the development of the germ theory has entirely revolutionized this branch of sanitation. Many of the former agents used for this purpose, and popularly supposed to be of great benefit, have, in the light of recent discovery, and practical tests, been found to be quite valueless, at least as germicides.

Wynter Blyth, Medical Officer of Health for Marylebone, in a paper published in the London *Medical Times and Gazette*, in 1884, thus treats the subject: "Rampant rides the quack in the fields both of preventive and remedial art. Quackery takes a well-known common powder, labels it with a grand mystic name, selling bright copper at the price of gold. Quackery finds a stink outstinking feebler stinks, and gives it forth as a disinfectant. Of all the substances gathered together under the name of disinfectants—solids, vapors, gases and odors—a small percentage alone possess any value."

This opinion may sound harsh, and appear to be too radical and sweeping, but the result of recent investigations goes to prove that it applies to very many of the so-called disinfectants with which the sanitary market is flooded.

A few of these, as well as many of the well-known and recognized chemical agents, or combinations of agents, have proven to be of value. In order to insure their success, however, they should be intelligently applied. Besides, some of the most effective agents are of a character dangerous to health and life if handled and used by persons ignorant of the fact, or unfamiliar with the proper method of application. For this reason, as well as to insure the best results, the use of disinfectants should be under the direct supervision and control of the sanitary authorities. A disinfecting corps, composed of intelligent and reliable persons familiar with the subject, should be organized and thoroughly equipped with all the modern and necessary appliances and materials, and placed in charge of each and every house or premises where found necessary.

The most effective in the list of disinfective agents is fire, which should be applied in all cases possible when infected bedding, clothing and similar material is involved. In most instances it is impracticable to carry out this method, when its application is left to the option of the persons interested, and also on account of lack of proper facilities for the purpose. The health authorities should be supplied with a proper plant for the destruction of such material, which destruction should in all cases be conducted by them. This plant could be conveniently erected upon property already owned by the city, and at a comparatively small expense.

The next best method for the disinfection of such material is by subjecting it to a high degree of dry or moist heat. This also cannot be satisfactorily accomplished by private parties, for the same reasons as those mentioned in connection with disinfection by fire. Suitable appliances for this purpose should be provided at the public expense, and operated by the health authorities. These could also be located upon property already owned by the city.

Further consideration of "disinfection and disinfectants," being such a long, wide and deep subject, I am compelled to forego, and intrust it to others abler and more competent. While it has been ably and intelligently discussed and investigated by the American Public Health Association, our own very efficient State Board of Health, as well as many other scientific bodies and individuals, yet it being a subject so exceedingly important, and so little understood by the general public, I trust that it may find a place in the list of questions to be considered by this convention.

A HEALTH TREATY between the United States and Mexico, "for the reciprocal protection of both countries against infectious diseases of men and animals," has been suggested by the Board of Health of the City of Mexico.

SMALLPOX is said to be raging violently at Saratoff, in Russia, in which country vaccination is not compulsory. In one large village alone 400 children are reported to have died within the last ten days.

On the Sewer System of Erie, Pa., and the Indispensable Improvements Needed Therein.*

BY GEORGE PLATT,
City Engineer, Erie, Pa.

SANITARY Science is of modern growth as we understand it. The subject has only engaged the attention of scientific men for the previous forty or fifty years, and it has been discovered that the greatest enemy to man's comfort, if not his health, was man himself; and the best method for the prompt removal of noxious refuse from the vicinity of his dwelling, which to the primitive inhabitant was a subject scarcely worthy of a thought, soon forced itself upon his attention as a subject, above all others, deserving of his careful consideration.

It has become evident that sanitary measures, in order to be efficient, require a recognition of certain laws of nature which had heretofore remained in obscurity.

Sanitary science has now become a recognized branch of medical study, as sanitary engineering has become a branch of the art of construction.

Effective drainage and sewerage has been shown in so many reports, from professional men and government commissions, that its influence on health, as well as length of life, is gradually beginning to be understood.

Drainage and sewerage are essential elements of health in all populous localities.

Calculated as a matter of profit and loss, everything would indicate that the expense required in establishing proper measures to avoid these evils would be far below the loss consequent upon the inefficient arrangement too frequently witnessed at the present time.

The disposal of the solid and liquid refuse becomes a serious problem in large towns and cities. The storing of the filth of a city within the city is to invite disease and death. The soil becomes polluted with sewage, and the air is filled with impure gases arising from the same.

The earth upon which many of our cities stand is completely saturated with sewage, contaminating the air and a constant reminder of the need of an efficient remedy. Few people comprehend to what extent the filth of cesspools contaminates wells from which water is used for domestic purposes.

We often hear it said that water passing through the earth is purified. But, realizing that the earth acts as a sewer and removes only suspended impurities, the part that is in solution remains in the water. Clearness is no proof of purity in water. The water of our mineral springs, although thoroughly impregnated with various minerals, is as clear as ordinary spring-water, and in a glass of water as clear as a crystal there may be poison enough to kill a whole family.

I was reading a short time ago of the Swiss village of Lausen, near Basle, which was supplied with water from a spring situated at the foot of a mountainous ridge called the Stockhalden. In this village, where there had not been a single case of fever for many years, an epidemic of typhoid fever broke out and struck down seventeen per cent. of the whole population. The cases of fever were pretty evenly distributed among the families in the village with the exception of six. As the six families which escaped did not use water from the spring, suspicions were aroused concerning the water and investigations were made.

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*Read before the Penna. State Sanitary Convention at Erie.

It had formerly been noticed that when the meadows in the Furlerthal—a little valley on the other side of the Stockhalden ridge—were irrigated, the volume of the water in the spring was increased; and by the sinking of the soil in one of the meadows in the Furlerthal a vein of water was discovered which it was supposed led to the spring in Lausen.

It was found upon investigation that a peasant living in Furlerthal had returned from a distant city sick with fever, and that the brook in which his clothes had been washed, and into which the slops from the house had been thrown, had been used to irrigate the meadows. This water thus spread over the fields and then filtered through the ridge, a distance of a mile, still carried the germs of the disease in it and brought death to the inhabitants of Lausen.

To prove conclusively that the spring was supplied from the Furlerthal, and to determine whether the water passed through an open vein or was filtered through porous material, the following experiments were made: Several hundred-weight of salt was dissolved, and poured into the hole in the Furlerthal where the vein was discovered. In a few hours the water of the spring became very salt, and the connection between the water in the Furlerthal and the spring at Lausen was established beyond a doubt.

They now mixed two and a-half tons of flour in water and poured it into the hole, but no trace of the flour could be found in the spring, proving that the water was so thoroughly filtered as to remove the minutest particles of the flour and yet still retained its infective properties.

My object in quoting the above is to show to what extent ground saturated with sewage may poison water in wells that are some distance away.

Many of the sewers of this city are simply receptacles for filth, the liquid portion of which is leaking into the soil and gradually poisoning the ground along their route: the solid substance remaining creating poison to be forced into dwellings by way of the connections on every occasion of wind-pressure at the outlets, or when filled with storm-water.

The sewers of Erie are what is termed the combined system, intended to convey storm-water as well as sewage, and, considering the cost of them, they are a poor return for the outlay.

There are 9 6-10 miles of brick sewer in the city, the diameters of which range from one and one-half feet to five feet, costing $222,964.54; sewers of brick and stone, 0.135 miles, costing $4,438.31; tile sewers, 19,364 miles, the diameters of which range from twelve to twenty-four inches, and costing $210,341.38. Total cost of all sewers, $437,744.23. Total length, 29.098 miles.

The First Ward has 4.271 miles; the Second has 6.718; the Third has 8.906 miles; the Fourth has 5.648 miles; the Fifth has 2.127 miles, including 3,625 feet in the Warfel addition; the Sixth has 1.428 miles.

The outlets are as follows: Little Cascade Run receives 4,741 feet, about nine-tenths of a mile; Garrison Run receives 5,303 feet, a trifle over one mile; Canal Sewer and laterals, discharging directly into the bay, 24,031 feet, a trifle over four and a-half miles; Peach, French and Holland and laterals, 5,794 feet, about 1.1-10 miles; Mill Creek, 113,769 feet, equal to twenty-one and a-half miles. The whole discharging into the bay by the several routes.

Our tile sewers, especially those put down previous to the past ten years, are mostly useless through incompleteness of construction and flat grades. Many of them are over half filled with the surrounding soil that passes through the joints.

They will not bear the pressure of flushing, for the reason that the sections do not line with each other, and the water used for flushing is as liable to cut outside as inside of the pipe. Such of the sewers as have been taken up, are exceedingly filthy, and the only remedy is to tear them out, and the sooner this is done, the sooner dwellings will be relieved from poisonous gases.

Many of the sewers are extremely shallow, and with very flat grades, which make it difficult for the engineer to find suitable outlets, and unless he sometimes adopts a longer route than would otherwise be necessary, he would be liable to add to the number of the inefficients.

In one instance, where it became necessary in order to pave a street, that about 165 feet of sewer be constructed, which at the usual price would have cost $323, it became necessary to construct a sewer costing $2,680 to procure an outlet.

One other sewer, 24 inches in diameter, about 1,300 feet long and costing $2,485, is practically useless so far as outlets for other sewers are concerned. It is barely deep enough to receive the sewage of the residences along its line. Could these old sewers be exterminated without causing other damage, it would be a decided benefit, and the public would be the gainer. Why they were constructed in the manner that they were, is more than I can comprehend.

The topography of the city of Erie is such, that it would seem to suggest to the engineer the position of the main sewers and laterals with but little study. This was forcibly presented to my mind while making a map of the contours of the city for every five feet of elevation during the winter of 1886 and 1887. The only study required was to subdue the fall instead of looking for the same.

Where the soil is made up of different strata, some of which are impervious to water, the benefit derived from a properly designed system of sewers is not confined to simply carrying away the sewage, but the water in the soil is drained away.

In some cases special drains will need to be laid to carry the ground water. But it will be found that simply digging the sewer-trench and refilling around the pipe with sand and gravel will make a marked difference in the condition of the surrounding soil. Cutting through the impervious strata and partly refilling the trench with porous material will frequently effectually drain very wet soil. It has been found in several cases, where the work on sewers had been delayed and interrupted by running quicksand, that on reopening the trench, after a little time, the water had mostly disappeared. This has especially been the case during the construction of some of the sewers in Eighteenth Street, and it is a matter of surprise to know the area that sometimes will be found drained by this alone, The draining seems to be brought about by the cutting of water courses and the tendency of the water to follow the course of the sewer outside of the pipe.

The effects of a dry subsoil in its influence on the health of residents has been frequently noted, and a greater number of deaths from various diseases is seen where the inhabitants are located upon a retentive formation than takes place when they are located on a porous one.

Although the drainage of the subsoil forms no part of the sewers proper, it is undeniable that notwithstanding all efforts to the contrary that so-called impermeable sewers, do to a certain extent, drain the subsoil of the subsoil waters.

There is no difficulty whatever in rendering a brick or pipe sewer water-tight, as it should be, if it be desirable to avoid a deposit of sewage within it, and the trench will still permit the withdrawal of the subsoil water without any further provision for it, provided it be not encountered in too great a volume.

If springs of water occur in the sewer, trench provision must be made for their removal by means of ordinary tile so laid as to collect surrounding water.

I am decidedly opposed to the combined system of sewers for this city, but they are here and here to stay. But if our city fathers or the general public could see the sewers as the engineer sees them, there would be some hope for improvement.

Staley and Pierson say, in their work on the "Separate System of Sewerage," that a theoretically-perfect sewer would be one in which all of the sewage would be carried rapidly to its outfall outside of the city, so that no time would be given for decomposition. The conduit itself should be smooth, impervious to water and should be water-tight through its entire length. It should be flushed at intervals, and so thoroughly, that the development of any sewer-gas would be impossible. The large sewers of the combined system are usually constructed of brick. The brick, being porous, allows more or less of the sewage to escape into the soil, even if every joint is water-tight, which is never the case.

The rough surface of the bricks soon becomes covered with a slime of organic matter, which is constantly decomposing.

In designing sewers on this system, the size will be determined by the amount of rainfall per hour during storms and the surface to be drained.

The volume of rainfall to be provided for, is so much more than the sewage that the amount of sewage scarcely enters into the computation. It is readily seen that ordinarily the sewage will be but a trickling stream in a sewer large enough to carry storm-water.

In a rush of water during a storm, however, a considerable quantity of the material which is supposed to remain the the catch-basin is carried into the sewer, and this, with other foreign substances which reach the sewer by reason of absence of catch-basins, settles on the bottom. These obstructions form a series of small dams in the sewer, and in dry weather the sewage stands in a succession of pools along the line, decomposing and sending up volumes of sewer-gas out of every crevice through which it can escape.

The great size of the combined system, it is seen, is detrimental to their efficiency in removing sewage rapidly and completely, and yet for the purpose for which they are supposed to be designed they are seldom large enough. Even where vast sums have been spent to construct the combined system of sewers it is seldom, if ever, that they will carry the water of great storms.

In many large cities, where millions of dollars have been expended for sewers of great size, the extraordinary storms are not provided for, and the consequence is, the sewers overflow and cellars and basements are flooded with sewage. Where storm-water is excluded from the sewers, or only a definite amount admitted for the purpose of flushing, no such disaster can occur.

I am decidedly in favor of the separate system for both the eastern and western part of the city, or rather a combination of both systems.

The Liberty Street sewer, being a part of what will be known as the intercepting sewer, will take care of all the sewage west of Poplar Street, and a good portion of the same between Poplar and Cherry Street.

The eastern portion of the city can be taken care of by a sewer up Ash Lane, also by one through Wayne Street.

These sewers will be large enough to receive a great part of the surface water in their vicinity. So far as the laterals are concerned, I will recommend that they be constructed to convey sewage and nothing else. Under the separate system, aside from the cost of the outlet sewer, the cost of the laterals will be over 70 per cent. less than if constructed to carry street water.

The surface water of the city, east of Parade Street, can, with little expense, be taken care of by the construction of ordinary gutters paved with cobblestone.

I never could see the necessity for the construction of large sewers for the purpose of carrying storm-water when it can so easily be made to take care of itself by way of the gutters with an occasional stretch of shallow sewer. A little care in grading the street will take care of all the storm-water in the outlying districts of this city.

The cost of sewerage works is often made unnecessarily great with the idea that it is the duty of the public to furnish an outlet for factories, slaughter-houses and all manner of establishments which are carried on for individual profit and in which the cost of removing the resultant refuse, is fairly chargable on the business rather than on the public purse.

So far as the community is concerned it should be compelled to construct sewers only for the removal of such waste matters as are incident to the daily life of all classes of our population.

If breweries, chemical works and other manufactories producing a large amount of liquid waste are to be provided with a means of outlet, this should be done entirely at their own charge. Their profit and convenience should not be advanced at the cost of every member of the community.

The sanitary authority of every city should have entire control over the sewers, with power to decide what shall be admitted to them and what excluded.

The more important considerations affecting the question of town sewerage were stated in the "General Conclusions" of the English Board of Health, after a thorough investigation of the whole subject of sewerage, as follows:

First.—That no population living amidst ærial impurities arising from putrid emanations from cess-pools, drains or sewers of deposit can be healthy or free from attacks of epidemics.

Second.—That as a primary condition to salubrity no ordure or refuse can be permitted to remain beneath or near habitations, and by no other means can remedial operations be so conveniently, economically, inoffensively and quickly effected as by the removal of all such refuse dissolved or suspended in water.

Third.—That the general use of large brick sewers has resulted from ignorance and neglect, such sewers being wasteful in construction and repair and costly through inefficient efforts to keep them free from deposits.

Fourth.—That brick and stone house drains are "false in principle and wasteful in the cleansing, construction and repair. That house drains and sewers, properly constructed of vitrified pipe, detain and accumulate no deposit, emit no offensive smells and require no additional supplies of water to keep them clear."

Fifth.—All offensive smells proceeding from any works intended for house or town drainage indicate the fact of the detention and decomposition of ordure and afford decisive evidence of malconstruction or of ignorant or defective arrangement.

The subject of the sewerage and drainage of any city is of more importance than of any other one subject connected with any well-regulated municipality.

It should be considered and acted upon prior to any plans for paving or the construction of parks or any work in the way of ornamentation. There can be no question that one improvement stimulates and propagates the other.

The demands of public protection of health are not only of medical interest, but they are at the same time linked together by the closest tie with the welfare of public economy, and with the moral advancement of the people.

Intelligent men must be well aware that, with the exception of the public schools, there are no other means of more surely influencing the moral elevation of the lower classes than the promotion of public and private cleanliness. The sentiment of the people should be thoroughly aroused, and every intelligent man is, or should be, in favor of sanitary reform.

The complete sewering of cities and draining of houses and public grounds must be considered a prime necessity under all conditions and circumstances.

The very best talent of the civilized countries is now employed to improve in all directions the sewage system.

I desire to call attention to the wants of that portion of the city situated north of Eighteenth Street and east of Parade Street. A great portion of this section is rapidly being built upon, and the nature of the ground is such that it might generally be termed "soaked." Plans and maps are made and can be seen at my office, showing about seven miles of a system that could be put down, if done under one contract, for less than $25,000, excepting the main sewers. Why cannot this be done? It is done in other cities. It would be the saving of many lives, especially of the women and children. It would be a saving to the city, for when a sewer system is put down by piecemeal it becomes expensive to construct.

The same might be said of the sewers west of Cherry Street and north of Eighteenth Street, except that the need is not so great there; but both are needed and should be pushed to completion.

The greatest obstacle to the west side is the want of the "Intercepting Sewer."

I will not attempt to predict when it will be constructed, but until it is, the west side will wait a long time for a much needed improvement, unless they are allowed to discharge their sewage by way of the "Little Cascade."

Just at this time it would make but little difference, so far as our source for procuring water to supply the city is concerned, for the bay is receiving all of the sewage of the city by some one of the routes.

I will forbear making any statements relating to our water supply for many reasons.

I am not wedded to the separate system of sewers for all cities, but for cities of this class and smaller ones. Were I called upon to establish and put down a system for effective duty, I would certainly recommend the separate system. With a separate, properly constructed and properly managed system of impervious pipes for the removal of all sewage and with other sound sanitary regulations for the care and removal of solid organic refuse, there is no reason why the spring and well-water in towns should not remain clean and whole some. Besides, when the earth of inhabited places is kept so clean as to preserve the purity of the water, no exhalations will arise from it dangerous to health and life.

I desire to call your attention to the great difference in the cost of the two systems, and will again quote from Staley and Pierson, who say that "among the advantages in favor of the separate system, the one that appeals most strongly to the average citizen, is that of reduced cost." This is the argument that reaches the heart—or which is quite as necessary the pocket—of the taxpayer. One of the grave objections to the combined system is its cost. The actual cost of such systems has been from five to ten dollars per lineal foot. The cost of the separate system has varied from seventy-five cents to two dollars per foot. It is safe to say that under ordinary circumstances its cost will be from one-eighth to one-third of that of the combined system.

Mr. W. J. McAlpine—a very eminent engineer—estimated the cost of a combined system for the city of Schenectady, N. Y., at $240,000. The total cost of the separate system now completed—by the parties from whom I quote—was about $35,000.

It may be asked, why the combined system is still adopted in so many cases, if the advantages of the separate system are so apparent? The answer to that question is, that engineering precedent carries great weight with it among engineers, and venerable error even is hard to put down.

The combined system is one of natural growth. In cities the natural watercourses are covered over and converted into sewers, and branches are built leading to them.

Then the branches are extended until they form a complete system of sewers. You can see the beginning of this system in almost any town which has a small creek running through it. The creek will partly be covered, and branch drains be constructed leading into it before the subject of sewers is brought up for consideration.

When the matter does come up, the chances are that the system already begun is simply extended and completed, and another bad precedent is set, and makes the introduction of the better system more difficult.

The introduction of the better system marks an important era in the development of sanitary drainage, recognizing as no other system has, the prime importance of an early removal of household and industrial wastes, which are the main factors in soil pollution.

I have no hope that any improvement can be made with our oldest sewers that are already in use until they fail entirely. Whenever attention is called to them, the authorities seem to treat the matter with indifference, and Councils will defer action, or move to file the whole matter. The sewers are out of sight, and the disposition seems to be to let them remain so.

I will not dwell upon this matter, for it cannot be treated thoroughly without taking too much time; but I would like to call your attention to the convenience of flushing the smaller sewers.

Wherever the separate system is in use, automatic flush-tanks are constructed in such a manner that from two to three hundred gallons of water can be sent through them each day, week or even month, as desired, keeping the sewer clean and free, leaving no matter to putrify, nor space for sewer-gas.

The Riverside Hospital.*

BY JACOB A. RIIS.

IN the bank of the East River, beyond New York City, on North Brother Island, is located New York's pest-house, better known to-day, as Riverside Hospital. Originally a most uninviting spot, the energy, enterprise and humanitarian spirit of the sanitary officials of New York City have so revolutionized this spot that while it can hardly be said that people are anxious to reside there, yet the temporary visit of the victim of contagious disease is shorn of all its former repulsiveness. Originally a sandy island, it is now a garden spot. To-day, where once was a waste of sand, are broad and shaded lawns; winding, well-kept walks, trees, shrubs and flowers; handsome, substantial buildings and hospital pavilions or wards, arranged on a plan securing perfect and absolute isolation with a maximum of comfort to the patients. One result is seen in a very low death-rate, considering the character of the institution. Last year, before the importation of typhus-fever in the shipload of Russian exiles, it was sixteen per cent. of about 900 cases.

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* Abstracted from The Cosmopolitan for July.

The old pest-house is still there, but even that has lost its terror. Become a harmless measles pavilion, it stands upon the northeast shore of the island at one end of a half-circle of one-story frame buildings, seven in number now, but so planned as to be capable of indefinite extension as the needs of the growing city may demand. Indefinite, that is, until the island is filled up; but that time is not expected to come while this generation has a live interest in small-pox and measles. The island itself has grown under the hands of the builders. Low places have been filled in, the half-score acres of available ground have become thirteen, and in place of the sandy beach, of which the winter storms claimed their share year by year, has come a strong sea-wall against which the breakers rage in vain. Secure behind this strong barrier the substantial buildings laugh at wintry blasts, and the young trees bend before them, knowing that springtime will come. There were doubting Thomases enough to predict the failure of the attempt to make a garden of the sandy island when they were set out. But the event has more than justified the confidence of the gardener who offered to forfeit twenty-five cents for each tree that died, if one cent were allowed him for each that lived. Not one has been lost.

The frame buildings are the fever wards. They are not conspicuous as the island is seen from the passing steamers, from the deck of which most New Yorkers get their only view of it, barring those who are taken there against their desire; but these are not given much to travelling. The great mass of them come from the tenements of the poor, where our city's epidemics are hatched. Scarlet-fever and measles claim most of the pavilions in times of comparative peace. This year the typhus-fever has invaded them. In the sudden rush their capacity was quite exhausted, and a camp of tents was pitched on the lawn to shelter the overflow. It was while the weather was yet cold, and a cry went up against the supposed outrage. As a matter of fact these tents have board floors, and a stove that make them comfortable abodes and much preferable in the eyes of the physicians to the wooden houses, partly because the ventilation in them is perfect, partly because not much is lost in destroying them when the scourge has had its day. Even the pavilions are built on the modern hospital plan with this end in view. It is the easiest way to get rid of a malignant contagion. Flame is a great purifier. Still, one hesitates to burn up a house, while a tent is touched off without a pang.

All travel to and from North Brother Island is restricted to two routes, that by the department steamer from the reception hospital at Sixteenth street, which is preëmpted for the sick, and the other, via the 138th street ferry. This latter "line" is represented by a single yawl, propelled by a sphinx-like boatman, who answers calls on the drum telephone at the shore end of the ferry. On visiting days, twice a week, a few scattered callers come sometimes to see friends in the hospital. With the exception of an occasional inspector of the Health Department, these are the only new faces ever seen on the island—literally faces only, for no visitor is permitted to go far beyond the ferry dock without having enveloped him or herself in the ugly Mother Hubbard gown and high rubber overshoes that are the uniform of the island, worn always in the sick wards.

Though the island is connected with the city by cable and telephone, the little hospital staff of nurses spend their lives there in virtual banishment from the world. It has happened that a whole winter has passed without any one of them crossing over to the mainland. The doctor may travel on the steamer, and does when has time, but the nurses not. Their duty is on the island, and there is always enough for them to do; for, whether there be two or twenty patients in a pavilion, they must have their own nurse. No other will do, lest the pests get mixed up and the end become worse than the beginning. There are six women nurses, young girls all of them, who with rare devotion and courage, have put away from them all that makes life sweet and taken upon them this dangerous duty. Their chief is the matron, Miss Kate Holden, who for ten long years has led this life of solitude and sacrifice. She is a Southern girl, whose people lost their all in defence of the Lost Cause—so the tradition of the department runs. It was little less than a lost cause she espoused when, having finished her course in the Charity Hospital training-school, she offered herself to the Board of Health. A typhus outbreak had then decimated the staff of the old Riverside hospital on Blackwell's Island, and the authorities were at their wits' end where to get other nurses. They looked aghast at this frail young girl and asked her, almost harshly, if she knew that she was courting almost certain death. She replied calmly that she knew; it was her chosen work. So they took her, and the doctors soon learned to trust her as their chief support in the unequal fight. Before it was won she too succumbed, and for weeks the city across the river, that had heard the story of her devotion and her suffering, listened anxiously day by day to the bulletins from her sickbed. She recovered and was made matron in the course of years at the munificent salary of sixty dollars a month. Ever since, she has been the mainstay and guardian angel of the island, coupling with her duties as matron and nurse now those of hospital apothecary as well. Having passed the requisite examination, she has been duly commissioned to mix the medicines, as well as to care for the sick. No black-bottle poison draught has ever issued forth from her little drug shop. When, last February, in a single day, fifty-seven Russian exiles were found in half-a-dozen lodging-houses suffering from typhus-fever, and were packed off to Riverside hospital, followed by a procession that swelled their number to 100 before the week had passed, Miss Holden spent forty hours among them, without sleep and almost without food, arranging, soothing and cutting the hair from their fevered brows, until, literally worn out, she had to be carried to her bed.

In the hallway of the administration building, the ivy-covered brick cottage in the middle of the island, a bronze tablet, set in the wall, tells of the death of Doctor Armistead Randolph Mott, resident physician, "in the discharge of his duty," during the typhus epidemic that preceded this last outbreak. The nurses pass it daily on their way from their pretty rooms upstairs. They have a library there, given by thoughtful friends, and even a music room that is evidently not neglected under the pressure of life's sterner cares. They cross the threshold of this their refuge only to take up their never-ceasing round of duties. The rooms of the physician in charge, the autocrat of the island, are on the main floor. His little principality embraces two score subjects, male nurses, helpers and attendants of all kinds. His rule extends to the boiler-house next door, where the steam is generated that heats all the hospital buildings, and whence the very complete fire-extinguishing apparatus of the island is directed in time of need. At the door of the kitchen, in the building on the other side, it stops short. There the matron takes charge, weighs out all the groceries and sees the food for the sick and the well, cooked. It is the very best that can be bought for money, though none is asked or exacted for it. Any patient who can afford it, and so wishes, can pay for his board, but he gets the same as all the rest. Champagne is frequently on the doctor's prescription, and may be said to be an item of steady diet on the island, though served neither on ice nor by the small bottle. A pay pavilion is in the plan of the hospital plant, but so far is only yet on paper. The general government is the only paying customer of the department. It sends the cases of scarlet-fever and measles that reach quarantine to Riverside, paying a fixed sum for their care. Yellow Jack and cholera it deals with at quarantine itself. Its diphtheria patients go to the Willard Parker hospital, in Sixteenth street, where the Health Department keeps its own as well. Diphtheria, unless complicated with other diseases, is not admitted to the island.

Upon the main shore also are the disinfecting furnaces or crematories, through which all infected clothing must pass before readmitted into the community as safe. The clothing of typhus-fever patients never returns. It is fed to the flames as the surest way of rendering it harmless.

Of sorrow and suffering the island has enough. It has had its modest romance too. Love, that laughs at locksmiths, crossed even the smallpox ferry. There has been courtship and taking in marriage. Children have been born there. The three little ones of orderly Richard O'Toole are natives of the hospital island. Curiously enough, none of them has ever had any of the contagious diseases that are rampant there, while their father has had them all. It has come to be a proverb in the department that nothing can kill O'Toole. The mother, too, is employed on the island.

As an institution North Brother Island is unique. There is nothing like it anywhere in the world. In the great cities of Europe, they have floating hospitals for smallpox, and more or less perfectly-isolated "contagious wards" in their ordinary hospitals. The isolation secured in New York is absolute. It must ever be the chief defence of our city against this enemy that is forever knocking. Disinfecting in tenement houses is good as far as it goes; quarantine better, but in such localities next to impossible. Summary removal of the patient removes at once also the danger of further infection. The power to effect it is vested in the health officers. Of how great importance this is in a city constantly exposed, as New York is, to the importation of pestilence by sea and land, and where the packing of the population in the poor quarters is wholly unprecedented, with consequent conditions most favorable to the spread of a plague, was shown in the last outbreak of typhus-fever among Russian immigrants who had passed through quarantine unchallenged. But for the Riverside hospital, as the strongest link in a splendidly-organized sanitary service, a disastrous epidemic could not have been averted. The cost of such a preventive is not to be considered for a moment, were it three times the $50,000 Riverside costs a year. That sum, doubled and trebled many times over, would not have made up to New York, as the commercial metropolis of the Western world, the losses she would have suffered from one bad epidemic, leaving the waste of life entirely out of the reckoning.

Physiology and the Prevention of Disease.*

BY DR J. M. RICE.

WITH few exceptions, that which is done at present for the prevention of disease is limited to improving the sanitary conditions surrounding the individual, in consequence of which two very important factors are left out of consideration: Firstly, that many diseases are caused by unfavorable internal conditions, which for the most part can be traced to imperfect development and improper modes of living; and, secondly, that exposure to unfavorable external conditions is not necessarily followed by illness, for the reason that the body itself offers a certain amount of resistance to the same. Unless, therefore, our efforts be extended to the prevention of diseases arising from internal causes, as well as to increasing the power of resistance, they must to a considerable extent remain inefficient.

Although the conditions upon which the power of resistance depends are for the most part obscure, physicians agree that, other things being equal, an individual is strongly guarded against disease when he is in good health, and that resistance diminishes when the vitality becomes lowered. Now, in order that there may be good health, *normal functional activity of all the organs* is essential. By endeavoring to secure good functional action, therefore, we do all possible for increasing resistance to disease caused by unfavorable external influences; but, in addition, we obviously aid in the prevention of functional derangements which, together with their consequences, constitute a large percentage of all diseases.

In order that we may have good functional action, we must call to our assistance physiology, the science that treats of healthy function. By the application of physiological principles, not only will the organs be temporarily aided in the performance of their functions, but, if continued, good physical development, that condition upon which permanent health depends, will be secured. That physical development is an important element in the maintenance of health becomes obvious when we consider that, other things being equal, an organ performs its functions in proportion to its strength, and it must also be clear that imperfectly-developed organs may, *with assistance*, perform their functions efficiently, and physiology points out how this aid may be given. In consequence of this help, the organs develop and perform their functions properly with even less assistance, and the condition of perfect health is gradually approached.

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* Abstracted from *The Popular Science Monthly.*

If we assist the organs, during childhood, when they are weak, not only will we do much to secure good health during this period, but we will be helping the organs to a healthy maturity. No agency is so powerful as muscular exercise for assisting the organs in their labor. By accelerating the circulation it antagonizes diseases due to congestions; by increasing elimination it confers immunity from diseases due to the retention of effete matter; by increasing the amount of oxygen inhaled, it enhances the oxygenation of the food, thus directly facilitating the development of energy, and, besides, oxygen being a heart stimulant, the circulation again will be favorably affected. It increases assimilation, and thus enables the organs to lay up more reserve force.

The blood, becoming more rapidly freed of its nutrient material by increased rapidity of assimilation, will be more ready to absorb such matters from the digestive organs. Improved absorption leads to more perfect digestion, and, consequently, muscular exercise aids considerably in the prevention of digestive disturbances. Further, when the digestion is enhanced, more food is called for. Increased appetite, together with improved digestion, absorption, oxidation and assimilation, naturally exerts a marked influence upon the general nutrition of the system; therefore, exercise is a powerful means to the prevention of so many diseases caused by malnutrition.

But. in order that muscular exercise may result in good physical development, *it must be carried on systematically for a long period*, and especially, for reasons already given, during the years of childhood. The *nature* of the exercise plays by no means an unimportant part in its efficacy. In order that all parts of the muscular system may be brought into play, gymnastics and calisthenics are indispensable. These exercises, however, should be supplemented by outdoor sports, such as games, rowing, swimming, skating and the like, for two reasons: Firstly, the latter contain an element of pleasure without which that exhiliration, which makes exercise doubly valuable, is apt to be wanting; and, secondly, the air inhaled at the time is purer than that in closed rooms, an advantage which cannot be overestimated.

But how can good physical development be placed within reach of all children? Only in one way, namely, *by the introduction of effective methods of physical exercise into schools*, for the reason that, during the greater part of childhood, systematic work outside of these institutions is, in the vast majority of cases, entirely out of the question.

As long, therefore, as physical exercise is grossly neglected, and unpsychological methods of teaching remain in general use, disease must continue in abundance, though ever so many improvements be made in sewerage, ventilation and disinfection ; for, as our argument has shown, attempts at prevention will in great part remain ineffectual until good systems of physical and natural methods of mental development have been introduced into the schools.

Chest Development *versus* Consumption.

BY JOHN J. THOMAS, M.D.,
Of Youngstown, Ohio.

I BELIEVE that a good chest development and its usual concomitant, the habit of deep and full breathing, constitutes the best possible safeguard against all diseases of the lungs. In ordinary respiration the lungs are not exercised nearly up to their fullest and best capacity, many of the air cells being but partially expanded, and many others, perhaps, not expanded at all. Any organ of the animal economy that is not maintained in a fair state of functional activity is more apt to become diseased or to suffer derangement than one that is habitually exercised ; and the same is probably true of each individual molecular member of every particular part.

It is in the power of every one to increase his or her chest capacity. The marvellous little air cells of the lungs need an occasional expansion more full and thorough than they get in ordinary breathing. The average adult breathes seventeen times a minute. Persons who have paid attention to the development of their chests often breathe only thirteen times per minute, and yet the one takes in just as much oxygen in a given time as the other. In the one case the lungs are more fully expanded than the other, and a large number of individual cells are put into healthful exercise and are consequently less liable to become diseased.

A good practice is to take deep inspirations while raising the arms above the head. Do this a dozen times soon after rising in the morning. Another, and I think much more excellent plan, is to walk at a brisk pace in the open air, taking in the breath during the time occupied in making five or six steps, and occupying the same length of time in expiration. Keep the mouth closed, and breathe only through the nose. The air is thus warmed before it reaches the lungs. Man is the only animal ever stupid enough to breathe through the mouth, and is the only one capable of reading and comprehending the language, " Into man's *nostrils* God breathed the breath of life."

Learn to use some of your reserve lung-power in the ordinary act of respiration, and your respiratory organs will not fall so easy a prey to baccillus of pneumonia and of tuberculosis.

A Few Points in the Management of Cholera Infantum.

BY O. W. PECK, M.D.,
Health Officer of Oneonta, N. Y.

THIS is the season of the year when the children under two years of age are dying of intestinal catarrh or cholera infantum. The causes are a high degree of atmospheric temperature, artificial feeding and teething. These factors are not all present in every case. Bad air and unhygienic surroundings will not of themselves produce the disease, yet the system is vitiated by their influence, and the infant attacked by intestinal catarrh, or any disease, in fact, is rendered thereby less able to successfully withstand it.

It is pretty generally known that without hygienic surroundings treatment is of little avail, while death is pretty certain. So, then, we may say that, while close in-door air and foul odors do not produce the disease *per se*, that the issue between life and death may depend upon their presence or absence. Such eminent authority as Prof. A. Jacobi says that the "worst out-door air, when cooler, is better than close in-door air."

From observations extending over thirty years, I am prepared to make the statement that nine-tenths of the deaths from cholera infantum occur in artificially-fed babies.

Can anything be done to diminish the mortality of these unfortunate infants? It is not our intention to go into the treatment of these cases, but simply to indicate a point or two, not original, but timely, which, if grasped, will serve to answer the foregoing question in the affirmative.

Intestinal catarrh is a disease of indigestion. Such being the case, then, withdraw the cow's milk—which is the food pretty generally used, either whole, diluted or mixed with some starchy food—from the bill of fare and substitute barley-water prepared in the proportion of one teaspoonful of whole barley to a teacupful of water. Boil until the intercasing of the barley bursts, even carrying the boiling somewhat beyond this point. While boiling, cover the vessel to prevent evaporation. Strain the barley-water thus obtained, which is in reality gluten-water, salt slightly and let the baby take it through a clean nursing bottle, if not weaned. If vomiting continues, give less in quantity. The object is to rest the digestive organs and let the bowels become emptied of their undigested contents.

The white of an egg mixed with the barley-water will always be well borne, and is easily digested. After the bowels have been emptied and the stomach rested—at the expense of considerable hunger, very likely—add the milk of a mixed dairy very cautiously. Increase the milk gradually if the infant digests it pretty perfectly. It is not essential that every particle of food be absolutely perfectly digested. If cheesy materal, however, begins to be manifest to any great degree, the quantity of milk should be diminished.

Sometimes, where it is impossible to add whole milk without disturbance, skimmed milk may be added. Milk, whether whole or skimmed, should, as a rule, be boiled. This not only sterilizes it, but drives out the gas contained in it, some three per cent., it is said. The object of giving skimmed milk is to get rid of a portion of the butter and casein. The formation of cream is accompanied early in the process by the formation of lactic acid, hence it should be skimmed early, not waiting for the entire cream to rise—only a film of cream, so to speak. Indeed, it is difficult in hot dog-day's weather to find milk that will not redden litmus. I have found it to be acid *immediately* after milking. It is said that the milk of cows kept in stables is always found to be so.

My experience in testing the milk of stable-fed cows has not been large, yet I have thus far found it to be more or less acid as soon as milked. Nevertheless, milk which but slightly reddens litmus, will sometimes be found to agree better than whole milk with its full compliment of butter and casein. Prepare food as needed, so far as practicable.

An error is made in regarding the milk of Jersey and kindred breeds of cows as the best for infants. It is too rich in butter fats. Even in the mixed milk of an average dairy, there is more than can be taken care of by the pancreas. The excess of fats must be disposed of in some way. So long as it passes off unchanged it does no harm, yet if it becomes changed into glycerine or glycero-phosphoric acid, or any other kind of acid, diarrhœa ensues. Not unfrequently butter fats become emulsionized by the alkaline secretions met with in the intestines. Sometimes even a double change may take place, a portion of the excess of fat becoming converted into glycero-acid, to be again changed by alkaline secretions further on into veritable soap. Jersey cow's milk is excellent for the dairy, but not for the nursery.

In conclusion I would add, that if starchy food is being given with the milk when diarrhœa appears in the infant, it, too, must of course be withdrawn, and resumed with the greatest of caution.

Avoid store foods, which, as a rule, are composed largely of starch. The learned (?) circulars sent out by the proprietors should be taken *cum grano salis.* We often read that the starch, by some process has been, or soon will be after ingestion, converted into dextrin. Possibly. If they are being used when the bowels begin to be loose, stop them and use the barley-water.

The microscope will determine whether the food is a starchy one or not. What will occur in the stomach after the ingestion of a given proprietary food is at best problematical—taken upon trust.

Of these foods, those which contain the least starch and the most gluten, are those most likely to be digested by infants, particularly puny infants. To determine the relative value of these foods, the microscope must be called into requisition. The results of such examinations are already, to some extent, the property of the profession. It is well to remember that professional and commercial interests do not always run in parallel lines. "Prove all things; hold fast that which is good."

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EDITORIAL

Letters on Health.

(Continued from page 371.)

LET us now, in the beginning, divest our correspondence of the atmosphere of sermonizing; I would not preach; I would not have you understand me as even advising; do not picture me to yourself as an old cranky fool, riding a hobby and trying to induce everyone else to straddle the same steed.

Rather read me, as I write, as one who, as the result of reading and observation, has concluded that there are many sensible persons in this world, who, like yourself, would be glad to receive some few suggestions, from time to time, that would be calculated to help them toward greater happiness through the agency of what they would call, better health.

What I will write you, every month, certainly can do you no harm, and, if this journal lies around, so that not only you, yourself, but those near and dear to you, will occasionally glance it over, I flatter myself that you will, every now and again, derive some little leaven therefrom that will be not objectionable nor unprofitable to your earthly existence.

I promise not to preach, but to tell you, in plain words, that you can understand, all the wonderful discoveries of the mysteries of nature in relation to the cause and prevention of disease, that are characterizing the closing days of the nineteenth century.

Now, in the first place, I am quite sure that you are quite ready to admit that certain diseases are contagious, that is to say, that they are capable of being transmitted from one to another. This fact seems to be well recognized, established and admitted, so far as the transmission from one sick person directly to another who comes into close contact with him, is concerned, but I do not think that the public have quite as clear an understanding as they should have in reference to the various ways in which contagious diseases may be conveyed or disseminated. To give you a little better idea on this subject, let me relate for you a few facts, and let me assure you that they are *facts*, and neither theories nor "flights of fancy."

Let me tell you, first, about a doctor out West, who did not believe that diphtheria was contagious; he was a very foolish man, who would talk a great deal about the nonsense of believing in germs, and would say that he did not believe that diphtheria could pass from one person to another. On one occasion he was attending a child who had diphtheria; he took home with him some of the matter from the throat of the sick child to examine it under the microscope. Now, children are always anxious to look through a microscope, and the doctor's children were not exceptions to this rule; he foolishly allowed them to do so, and every one of them caught diphtheria and died. It is needless to add that this doctor now believes that diphtheria is contagious.

Now, again, there was a young girl of 12 years of age, who was sick with diphtheria; her most intimate friend—a school-girl companion—lived in a distant city. Lying sick in bed, she was anxious to write to her little friend; her mother, ready to gratify her sick darling's slightest wish, and ignorant of the danger that might result therefrom, wrote a letter for her, and, as the sick child wanted to send a kiss to her friend, the mother drew a circle in ink, the child kissed the spot, the mother wrote that this was a kiss from her poor little sick daughter for her friend, and the letter was posted. Upon its receipt, just as we might expect, the kiss-spot was many times kissed by the well little girl, and in a few days she was seized with diphtheria and died.

Some years ago I was in one of the interior cities of this State, and I there learned this very interesting story: A merchant in the city received a large instalment of buffalo-robes. It so happened that, at this very time, a member of this merchant's family, who lived in the same building with the store, was lying sick with smallpox; it was in winter, and the nights were very cold. The brilliant thought suggested itself to this merchant that he would use one of these robes as a bed covering for the sick person. After a while, when the sick person got well, this robe was placed back in the store with the others; but it was not disinfected. In a short time the doctors of the city commenced to find cases of smallpox scattered here and there throughout the city. They were, at first, somewhat puzzled to learn how the disease had commenced, until, after putting their heads together, it was learned that in each family in which smallpox had occurred there was found one of the buffalo-robes, bought from the particular store in which the whole lot had been contaminated by the one robe that had been used as a bed-covering for the smallpox patient.

About one year ago, a child died of diphtheria in a little town out near Pittsburgh, in Pennsylvania. The home of the child was in a town in Ohio; the State Board of Health of Pennsylvania will not allow the railroads to carry a dead body that has died of a contagious disease. The parents of this child were very anxious to bury him at home, and they persuaded the doctor to make his certificate of death read from some disease that was not contagious. The little boy was taken home, the coffin was opened and they had a regular public funeral. In a few days there were several cases of diphtheria in this town, occurring first among those who had attended the funeral, spreading from these to others, until quite a severe outbreak of the disease, with many deaths, had occurred in the town. Of course, this doctor was very much to blame; instead of doing as he did, he should have explained to the parents how dangerous it would be to have a public funeral, and he should have persuaded them not to allow any one to see the little boy.

Last Monday, I was on my way to New York with a very sick man, whom I was taking to his home, and, on the cars, I fell into conversation with a grief-stricken father, who, last January, had buried his only child, a daughter of fifteen. The poor mother was also on the cars, and it made my heart ache to see the expression, almost of despair, that seemed to be on her face to stay there forever. This mother and father, blessed with wealth that enabled them to gratify every wish, had their whole love centred on this only child, whom they loved with an all-consuming love. Well to-day, ten days later this girl was an angel in heaven, and the parents are left to years of almost inconsolable grief. I had heard of the case before, but it was only on my journey to New York that I learned of particulars that cause me to believe that this child's death and the parents' misery are due to the fact that she (the child) did not know that, pure, and white, and harmless as it looks, snow is a very foul, dirty and dangerous thing to eat. A few days before this child was taken sick there was a very severe snow-storm in New York City, where the family lived. In a large, crowded city like New York there are always myriads of disease germs or seeds floating in the air; snow-storms always purify the atmosphere by catching hold of the seeds in the air and carrying them down to the ground; hence, after a fall of snow, the air is purified, but the snow itself is defiled. If left to nature, after a while, as the snow melts, the water soaks into the ground and carries these seeds with it, and they do no one any harm; but I was informed that this young miss amused herself by making "snow ice-cream" and eating quantities of it, just as most children have been accustomed to do. I have very little doubt that the violent illness with which this child was seized a few days later, and of which she died in ten days, and which was a mixture of diphtheria, measles and scarlet-fever, was caused by the seeds or germs that she took into her stomach in great quantities in this "snow ice-cream." Do not let such stories frighten you; there is no reason for alarm, only make up your minds that, hereafter, you will not eat snow; play in it all you want, but do not eat it.

Now, I have given you several illustrations that tend to prove that disease can be conveyed from one person to another, and I could go on and tell you many more such stories, but I think you have heard enough to make you agree with me that acute diseases, that scarlet-fever, smallpox, diphtheria, measles, typhoid-fever, cholera and similar diseases are capable of transmission from a sick person to one that is well. Now, then, this brings us to the question how to prevent these diseases from being so transmitted. There are two factors in this scheme of prevention: the first, measures that are calculated to keep our bodies in such condition that when these germs or seeds get into us they will be unable to live and grow, but will die and pass harmlessly away from us, and this question we will talk about in our next letter; the second part of this prevention consists in dealing directly with the germs, so that they will be killed and will be confined to the sick person and will not be able to travel toward the bodies of those who are well. This last question we will take up at present, and will tell you that this means of prevention is summed up in the two words, " Isolation and Disinfection." I would be glad if you would look into your dictionaries and thoroughly master the meaning of these two words; but to help you along a little I will tell you what they mean. If I am called to a child who has scarlet-fever, I recognize that child as a field in which has been planted the seeds of scarlet-fever, just as I would regard a country field in which corn had been planted, and I know that these seeds will grow and multiply in this body and that they will be given off into the air of the room and will be found in all the discharges from this body, and that if these seeds find their way into another child whose body is in condition to favor their development, that this second child will have the disease. (I also know that this sick child wants as much pure air as possible during its sickness.) I know that the furniture and curtains and carpets of this sick room will be full of the seeds of disease by the time the sickness is over. I, therefore, select the largest and airiest room in the house and I remove from it all unnecessary furniture; I even take the carpet up; I place the sick child in this room, and with it whoever is to do the nursing, and from now on until all danger of contagion has passed, not one single soul enters or leaves that room but the doctor. This means isolation. You see that the factory in which the seeds of disease are being made—that is the sick body—is thoroughly isolated from everybody else in the house; no one goes in or out of the room but the doctor; but you wonder if he cannot carry these seeds with him; yes he can, but he does not, and I will shortly tell you why. I have a tub in the room in which I have always a solution of corrosive sublimate, a poisonous drug that will kill any seeds of disease; into this solution I have the nurse put every handkerchief and everything that is used about the patient; all dishes that are brought to the sick room are washed in this solution before they are taken again out of the room; all discharges from the sick child are received in vessels in which I have placed a similar solution; nothing ever leaves this room until the seeds that may be on or about it have been killed by corrosive sublimate. But now, I know that the seeds are floating about in the air of the room and that they may float out through the doorway and thus spread through the house; so I insist that the nurse must always have a sheet well saturated with this same corrosive sublimate always hanging in the door-way, and just outside of the door in the hall I have all the time going a little steam atomizer, that is saturating the air all about with carbolic acid, so that with these precautions it would be very difficult for any live germs or seeds to get far away from the vicinity of the sick room. But now, we have the doctor going in and out; will he not carry these seeds with him in his hair, or his beard, or on his hands, or in his clothing; yes, unless he does what he ought to do. If I happen to be the doctor, I will have a gum-coat hanging just outside the door, where it will be all the time in this vapor of carbolic acid I have told you about, and I will put it on and button it up closely, so as to cover all of my clothing before I enter the room, and when I come out I will put it into a tub containing a solution of corrosive sublimate that is standing by the door, and I will tell the nurse to let it soak for half-an-hour and then to hang it up on its nail by the door ready for my next visit. I will also wash my hands, and my hair, and my beard or mustache with this same solution, and I will turn the vaporizing carbolic acid from the atomizer unto different portions of my body until I have been well covered with it. I must also instruct the nurse to saturate towels with this solution of corrosive sublimate and hang them about the room as she would fly-paper, so that they may destroy any germs or seeds that happen to light thereon. Now we go along until the child gets well or dies. When I feel that the body is no longer a source of danger, when I feel safe in allowing the child to leave the sick room, I yet feel that, even with all of my precautions, there must be a lot of seeds in this sick room; now, I close all the windows and plug up all cracks and crevices so as to make the room as nearly as possible air-tight, and I burn five or ten pounds of sulphur. I first place in the centre of the room a tub with a few inches of water in it; in this tub I place a tin or iron dish, into which I place some hot coals from the stove, and on these I put the sulphur. Now I close the door and retire. For twenty-four hours I leave the fumes of sulphur in the room, then for another twenty-four hours I leave every door and window wide open; the sulphur has killed the germs, now I want the air-currents to carry them away. I am careful not to go into this room while it is full of sulphur fumes, for they might include me in their deadly embrace. Now-a-days, the druggists are making sulphur candles that can be burned just like ordinary candles, and are, therefore, more convenient, where they can be had, than the method that I have described, but whether you use the sulphur candles or the sulphur as I first described, you must always have the water in the tub, as the sulphur will not be effective unless the vapor of water is rising into the atmosphere at the same time that the sulphur is burning.

Now then, I direct that all clothing that is not of value shall be burned, because by so doing we burn up any seeds that may be in it. If possible, I scrape the paper from the walls and repaper them. I now instruct that all the wood-work and the floor of the room shall be well scrubbed with this same solution of corrosive sublimate about which I have been telling you.

All clothing that cannot be burned must be left in the room hung about so that the fumes of sulphur can get at them; it will discolor and ruin some of them, but we cannot help this. Now we are pure and clean, and now you know what disinfection means. Now you know that isolation means keeping the sick person away from everyone else, and everyone else away from him, and disinfection means all these means that I have been describing to you for the destruction of the germs or seeds. "Isolation and Disinfection," do not forget these two words; if any doctor ever asks you how to prevent the spread of contagious diseases, tell him, "By Isolation and Disinfection;" and if he asks you what these words mean, tell him, as well as you can remember, what I have just been telling you. Next month I will tell you, as I have already promised, how to keep yourselves in such good condition that even though these nasty little germs do get into your body they will not be able to do you any harm.

Politics and Sanitation

WILL not mix; a politician may be a sanitarian, or a sanitarian may be a politician, individually; but "practical politics" and "practical sanitation" won't mix. In all well-ordered communities it is customary to regard the judiciary as removed from politics, and, we are glad to say that, as a rule, this custom holds good with sanitary boards; possibly because there is, usually, but little patronage and no "boodle" connected therewith. New York City has had and, we believe, still has, probably the most authoritative and efficient sanitary administration of any municipality in this country. Gigantic sanitary problems have been encountered and successfully combatted, and the results have been the admiration of sanitarians everywhere. But now, rumor has it that the germ of practical politics has been inoculated into this Board, and that, as a result of this infection, Drs. Prudden, Jacobi and Janeway no longer contribute their valuable services and inestimable experience to the sanitary administration of New York City. We trust that this rumor is without solid foundation, but, whatever may be the cause, we heartily sympathize with the people of New York City in the loss of the services of these three world-renowned sanitarians, physicians and gentlemen.

Let us earnestly hope that "practical politics" has not seized hold of the health department of New York City. The whole country is vitally interested in an efficient, impartial, vigorous, intelligent, incorruptible sanitary administration in New York, for, as through this port come most of our emigrants, so also into this city come most of our imported diseases to be nurtured, multiplied, intensified and disseminated throughout the land, or to be throttled in their incipiency according to the efficiency or inefficiency of the sanitary officials.

The whole country is deeply interested in the sanitary administration of New York City, and we bespeak a national protest against the inoculation of "practical politics" into this board; they won't mix.

Look Out for Cholera.

DON'T get frightened; do as General Grant used to do, when after a period of inactivity, the presence of the enemy's advance guard indicated a renewal of hostilities. Well, what did he do? Did he wait for the main body of the foe to precipitate itself upon his army and annihilate it; not much. He cleaned up his cannon and his guns and prepared himself, in every way, to resist and defeat the enemy.

The advance skirmishers of the Cholera hosts have migrated from India and are now manœuvering about Europe; if they find the conditions favorable, it is not unlikely that the main army may invade that country, and, in these days of rapid intercommunication, it is not at all unlikely that the battle-field between the germs of cholera and human life may be transferred to our own country.

The sanitary generals are already at work; health officials at all ports of entry are on the qui vive for any suspicious cases, and it now behooves the rank and file, to look to themselves. The personal precautions against cholera are very simple and very efficacious, and may be summed up under four headings:

(1) Don't get frightened.

(2) Personal cleanliness and cleanliness of premises.

(3) Care of the stomach; for it has been demonstrated that a healthy stomach can and will destroy the germs of cholera, so that even should they be taken into a healthy stomach they cannot cause the disease, but will die and pass harmlessly away; hence should we be particularly careful with our food and drink in cholera times.

(4) As soon as the papers give warning of the arrival of the advance guard on our shores, we should boil all the water that we use. These precautions are simple and easy of application, yet, if faithfully adhered to they will prove most efficacious.

A Model to Imitate.

There are a great many peculiarities reported of men of genius. Sir Isaac Newton was a vegetarian; General "Stonewall" Jackson thought one side of his body was heavier than the other, and always carried a weight in his pocket; Schopenhauer played the guitar; Erasmus would not eat fish, and Dr. Johnson never took a walk without touching the lamp-posts. But we learn that the peculiarity of Mr. Gladstone's greatness is more curious and subtle than that of any of his predecessors. Every bolus of food which he takes is chewed thirty-two times! Why thirty-two instead of thirty-nine, which is the number of the Articles, or thirty, which is the number of the days of the month, or some other number which has a specific significance, has not been explained. Perhaps some time the Grand Old Man will leave his Homeric and Celtic studies for an elucidation of these more serious problems.

We are, however, not disposed to quarrel with thirty-two. It is a good number, and one which ought to secure thoroughly pultaceous mastication, and a completely saturated insalivation, besides exercising the masseters, temporals, externals and internal pterygoids, and securing time for a pleasing gratification of the sense of taste.

There are a great many things making up the admirable character of Mr. Gladstone which cannot be imitated, however desirable that might be. But his two and-thirty method of mastication can be followed, and would have important influences upon the health and happiness of Americans, if it were done. Dyspepsia, biliousness, headaches, neurasthenia, insanity and bad temper would decrease, and perhaps disappear. We commend the method of operation upon the food bolus adopted by Mr. Gladstone. If humanity imitates it, we can truly say: *Exegi monumentum ære perennius*, no matter what becomes of the Irish.—*Medical Record.*

NOTES AND COMMENTS

Disinfected Second-hand Clothing.

The medical department of the Ministry of the Interior in Russia has issued an order, that all second-hand articles put up for sale must be disinfected and provided with labels testifying to the act of disinfection. The police surgeons are to be charged with the duty of enforcing this order, and all second-hand articles not provided with the proper testimonials will be confiscated.

The Highest Form of Beauty.

Writing on "The Art of Ravenna" in *Scribner's Magazine* for July, E. W. Blachfield tells us that when the Greek artist of Pericle's day carved a god or an athlete he went to the gymnasium or the palestra and found his model in the youths who flashed by in the foot-race, for the Greek had a love for the human body unique in the history of art, and, as beauty was, to him, the visible expression of the good, so a well-developed body was the highest form of beauty.

A Worthy Sanitary Feat Quietly Accomplished.

It is alleged for General Rusk that he has greatly improved the treatment of cattle exported to Europe for food purposes. The mortality among them at sea, resulting from cruelty, want of water, etc., was formerly stated at 16 per cent., while at the present time it is 1 per cent. The value of these exportations is not far from $25,000,000 annually. If this statement is only partly true, General Rusk has accomplished a great sanitary reform, for he has been the means of indirectly purifying the flesh-food supply of thousands of European consumers. —*New York Medical Journal.*

Artificial Feeding.

A Boston physician has established a milk laboratory, from which he proposes to dispeuse, upon the prescription of the physician, milk that has been not only sterilized, but that has been also prepared to meet the requirements ot any particular case; the proportion of fat, or of sugar, or of albuminoids being increased or diminished, or arranged so as to meet the idea of the requirements of each case, that the physician may have formed. In these days of artificiality, when love of nature seems almost a lost art, such an institution is to be welcomed, for when we find degenerate humanity we must make the best of it, but, to our mind, the true spirit is that which will cause our women to so live, that they may, themselves, be able to furnish naturally ideal milk for their babies without the intervention of an artificial laboratory. Art is commendable, but nature, alone, vouchsafes perfection, and that is what we want to nourish our coming men and women.

The Evil-Eye as a Cause of Dyspepsia.

To the inhabitants of Abyssinia there is no such thing as cause and effect; an attack of indigestion, from over-eating, means, not gluttony, but the influence of the "evil-eye;" he would feel assured that some part of the performance of appeasing his appetite had been observed, and it is the almost invariable custom for the natives to cover themselves carefully from observation whenever they eat.

Table Habits of the Sultan of Turkey.

It is claimed by T. D'Apéry, who writes in *Frank Leslie's Popular Monthly* for July, that the most enlightened and progressive monarch who has ever occupied the throne of Turkey is the present Sultan, Abdul-Hamid II, and we are inclined to agree with this view when we learn that at meals he eats but little and "that very slowly." There is no greater evidence of want of intelligence and refinement than the disgusting and harmful habit of "bolting" our food.

The International Temperance Congress.

The preliminary programme of the Fourth International Congress for the Prevention of the Abuse of Alcoholic Drinks, which, as has already been announced, is to meet at The Hague on September 8, has been issued. The following are the subjects proposed by the Organizing Committee for discussion: (1) "Alcohol in its Moral, Hygienic and Medical Relations;" (2) "The Preventive and Educational Measures in Use for the Repression of the Abuse of Alcoholic Drinks (Associations, Meetings, the Press, Amusements for the People); and, (3) "The Compulsory Means which can be employed by the State and the Community for the Suppression of Drunkenness."

Hot Weather Hints.

Much of the intestinal trouble prevailing during the summer is to be attributed to the excessive use of fluids, especially when iced. It is so natural to run to the water-cooler as soon as one rises and to wash down the breakfast with copious draughts of iced tea or milk. By the time one is half-way to his office he is drenched with perspiration and ready to imbibe anything drinkable. The day is spent in swilling soda water, ice-cream and similar trash that destroy the appetite and weaken the sufferer by the profuse perspiration that drains away his salt. The consequence is an acute indigestion, or "bilious attack," or perhaps heat exhaustion, so often mistaken for sunstroke. The way to be comfortable in hot weather is to be very sparing in the use of fluids, relieving thirst by resisting it, when, like the devil, it will flee from you.

For the little ones, clothe them in a single garment that can easily be slipped off, and place a large tub of water in the middle of the nursery; then go away and they will do the rest.—*Times and Register.*

Typhus Fever in British Cities.

From the local reports collated by the *Public Health*, it is learned that cases of typhus-fever have occurred in the following cities: Carlisle, 12 cases; Dundee, 27 cases and Cork 11 cases. At Glasgow, London and Liverpool, cases have been reported, a certain proportion of which owe their origin to importation from Eastern Europe. At Carlisle, the epidemic is reported to be at an end, in the *Lancet* for June 11.

Medical Examinations before Marriage.

It is said that there is a law in Brazil, compelling prospective brides and grooms to submit to a medical examination as a preliminary to a legal marriage. Such a law is theoretically excellent as a means to stamp out hereditary tendencies to disease and to prevent the transmission of certain maladies, like syphilis to the offspring. But practically we fear love laughs at doctors as well as at locksmiths, says the *Medical Record.*

The Sanitary Advantages of Pure Municipal Government.

Commenting upon the commendable, but, we fear, Utopian conception of a few of the young men of better New York who have combined for the avowed ultimate purpose of wresting the municipal government from the disreputable business politicians, *The Century* for July reminds us that in the model governments of cities like Glasgow, Berlin, Edinburgh and Birmingham, it is the poor whose health, happiness and security are most carefully provided for and protected. It is this consummation, that we all most earnestly hope for, and stand ready to encourage and help to the utmost of our ability.

Sulphured Almonds.

That the public is to blame for much of the prevalent food adulturation is evidenced by an artice in *The Popular Science Monthly* for July, wherein Henry J. Philpott, a California Almond grower, tells us that it is almost impossible to sell unbleached almonds, this bleaching being done by sulphur. The public may pat the honest grower of unbleached fruit on the back, but he will never receive a penny's worth of encouragement in the market. Unbleached apricots are quoted at from to to four cents a pound, while those that are bleached or "sulphur-poisoned" sell for from five to six and a-half cents. The author is a philosopher, who, recognizing the disinfectant properties of sulphur, consoles himself with the reflection that almonds so treated must be particularly free from disease germs. But, remember that when you buy bleached almonds you are buying unnaturally "doctored" almonds, and that they are so "doctored" because the mighty public demands it, though, since it is only the shell, and not the fruit, that is sulphured, there would seem to be no real danger in the case of almonds, unless the sulphuring is done when the nuts are green, when the fumes may penetrate to the kernel.

Adulteration in the United States.

A writer in the Philadelphia *Star*, refers to the enormous quantities of materials that are sold in this country, the only known use of which is to dilute or adulterate our food articles, and says: "It is estimated that ninety millions dollars' worth of fraudulent food-products are annually disposed of, in these United States, either mixed with good articles or sold in place of them." This represents the extent of the theft perpetrated on the consumer, by men who coin fortunes with "cheap" wares. Incidentally the products of the farmer are depreciated, so that the producer feels the steal along with the consumer.

Ventilation in the Days of Columbus.

Disheartened by his repeated failures to enlist the interest of Ferdinand and Isabella in his projected voyage of discovery, Columbus, disgusted with the world and its inhabitants, betook himself to the seclusion of the monastery of La Rabida, at Huelva. As we look at the picture of this monastery in *The Century* for July, and behold the great expanse of blank wall, relieved by so few little openings, and when we remember how essential is fresh air to healthy existence, our wonder is not that the world was, in those days, ravaged by ever-present filth diseases, but that any one survived. The "Black Hole" of Calcutta was a little worse than this monastery of La Rabida, but not much, and we take it that this building is but typical of the style that held sway in the days of pestilences.

Abyssinian Filth.

Of all filthy human beings, the Ethiopians who inhabit Abyssinia, can easily lay claim to first place, and the evidence of Frederic Villiers, in *The Century* for July, will fully substantiate the claim, for he informs us that an Ethiopian will tell you, without a blush, that he is, necessarily, washed at birth, cleans himself on his marriage morn, and hopes to be washed after death; that once every year he dips himself in the river on the festival of St. John the Baptist, and regularly every morning he wets the end of his toga with the moisture from his mouth and freshens up his eyes. Whenever he feels his hide harsh and uncomfortable, he anoints himself with mutton fat. Of a morning one may see the *jeunesse dorée* of a town stalking with body erect, and with about a pound of butter stuck on their heads, gradually melting under the increasing power of the sun. The men may look a shade cleaner occasionally, caused not by any act of their own, but through the accident of being for hours in a rainstorm, which at this season occurs daily; but even then the odor of rancid mutton fat impregnates the atmosphere wherever they may be.

Is it any wonder, then, that disease is rampant everywhere, consumption prevailing; scrofula and other loathsome complaints come next? Seven out of every ten persons have some kind of disease that shows itself in sores and eruptions.

The Healthfulness of Chicago.

In view of its approaching international importance, it is interesting to learn from Edward G. Mason, in *The Atlantic Monthly* for July, that, in spite of the adverse conditions produced by its sudden growth, Chicago is a very healthy city. Nature, with her lake winds and prairie breezes, maintains the purity of the atmosphere, despite man's devices to the contrary. It is a fact that the people of Chicago are pre-émimently alive to the value of sanitation, and that they will spend any amount of money to accomplish desirable ends.

While large cities can never be made typically healthy localities, we yet feel that Chicago will offer to its hosts of visitors a sanitary condition as near perfect as the suggestions of man, aided by all necessary money and legislation, can vouchsafe.

Vichy Water Imitations.

President Carnot, of the French Republic, and the lessor company, now holding rights in the Vichy springs, are plaintiffs in a suit against a New York syphon-water dealer. The defendant has for years been engaged in the imitation or purported imitation of waters of a certain spring, called "Grand Grille" of Vichy; the plaintiffs now ask that an injunction be granted against future infringements, and damages on account of past imitations be awarded. From this bill of complaint, it appears that the French nation is the true owner of the Vichy property, and President Carnot appears in the suit in his official capacity, as head of the French government. If the Plaintiffs win in this suit, any use of the word Vichy, as descriptive of artificial waters made in this country, will be interdicted. The defense has thus far simply indicated an intention to dispute the complaint on technical grounds, such as the question of jurisdiction and the like.

Hunger Bread and Typhus.

Mr. W, C. Edgar thus writes in the *Review of Reviews* for July: "While in Russia I saw many samples of 'hunger bread,' as the food used by the peasants in lieu of something better is called. Made from weeds, chopped straw, cockle or tree bark, it is sometimes even mixed with sand, and varies in repulsiveness according to the degree of want in the different governments. It rarely contains more than a trace of legitimate breadstuff, and most of it is so disgusting in smell, taste and appearance that it is difficult to imagine that mankind could become reduced to such an extremity as to be forced to eat it. Nevertheless, much of it has been devoured, and in some districts it is still occasionally used when better food is not to be obtained. The prevalence of typhus is due, to some extent at least, to the consumption of this injurious substitute for bread. From all the governments affected by the famine come reports of an alarming spread of typhus, smallpox and scurvy. In Kazan and the more remote provinces these diseases are epidemic, and in the district which I visited typhus was increasing rapidly."

Physical and Moral Depravity.

When Dr. S. Weir Mitchell, at the opening of the Department of Hygiene of the University of Pennsylvania, eloquently dwelt upon the intimate relationship of the health of a community to its moral tone, he but voiced the observation of all observant thinkers. He who reads the memoirs of Prince Tallyrand, just issued, cannot but conclude that this famous man, intellectually, was but infamous, morally, and he cannot help but trace a close relationship between Tallyrand's moral depravity and his crippled leg, the result of a neglected dislocation of his ankle when he was but four years of age. How great was the influence of Byron's club-foot in shaping his moral tone, we have ample evidence, and if outward physical deformity is such a potent moral factor, far greater is the influence of hidden disease, of internal physical deformities, in shaping the morals of the individual and the community.

Malaria in Ancient Greece.

It would seem that the Roman Campagna, so long the hot-bed of malaria, has a counterpart in the swamps near Eretria, in Greece, which Charles Waldstein tells us, in *The Century* for July, renders the locality practically uninhabitable. More than two thousand years ago the same difficulty existed, when a shrewd Greek, named Chairephanes, offered to drain the whole area at his own expense, providing he were allowed to cultivate the reclaimed area for a period of ten years at a nominal rental. So that we see that twenty centuries ago the relationship between swamps and disease was quite well understood, and the remedy was appreciated. The experience of the Roman Campagna and of the swamps of Eretria teach us, in unmistakable terms, that heat and moisture acting upon organic débris will produce an agency that, if not utilized in the maintenance of vegetable life, will prove detrimental to human health. The cause is manifest; the cure is obvious.

Consumption in Abyssinia.

It will be seen by the note which we elsewhere publish on "Abyssinian Filth" (p. 436) that consumption is the most prevalent disease among the Ethiopians; we call special attention to this fact because it affords a striking illustration of the relationship of cause and effect, between foul air and consumption. Passing through the gateway of the yard of an average house in Adowa (the capital of Abyssinia) one crosses a compound which resembles a scattered dunghill and enters a quadrangular building which serves as a residence and mule-stable combined, counting also among its occupants some chickens, a goat and a few sheep. The floor of this house (which Frederic Villiers describes in *The Century* for July) presents the appearance of an ill-kept stable, covered with muck and frowzy straw. When, to this poisoning of the atmosphere, we remember that, in Abyssinia it is not uncommon for a daily temperature of 110° to fall rapidly after sundown to 45°, we can readily understand why diseases of the lungs should be so prevalent.

Treatment of the Tzar's Consumptive Son.

The Grand Duke George, the Tzar's second son, who, ever since his enforced return, through illness, from his Indian tour, has been under medical treatment for pulmonary disease, has been passing the winter at Abbas-Tuman in the Caucasus. A private letter from that place states that his Imperial Highness is undergoing a most remarkable course of treatment. The walls in his apartments are bare and unpapered, the furniture is of plain wood or cane, without upholstering or stuff-covering of any kind, and his bed consists only of the thinnest of mattresses. Throughout the winter only a very moderate fire has been kept up, while the windows of the Grand Duke's rooms have been continuously open. His attendants have suffered dreadfully from the cold; but his medical advisers hold that this low temperature is very beneficial to their imperial patient, as it tends to destroy the bacillus and prevent the formation of tubercle. They maintain that the progress of the disease has been arrested, and express hopes that, if the treatment which they prescribe is persevered with, the Grand Duke will in two years' time have completely recovered.—*Medical Record.*

The Mortality of War.

In the past century it is estimated that over nineteen million persons have been killed in the wars of civilized countries, and twelve hundred millions during the last thirty centuries. Flammarion, the astronomer, makes some curious calculations regarding this mortality rate. The blood of the victims would amount to eighteen million cubic metres. This quantity of blood weighs 18,900,000,000 kilogrammes. It is an unfailing stream, which every hour since history began has unceasingly poured 680 litres of blood to dye the royal purple worn by the occupants of imperial thrones. If the 1,200,000,000 skeletons should rise and climb one upon another, the ladder thus formed would reach the moon, coil about that body, and, continuing onward, would mount into infinite space four times as far again, that is, 500,700 leagues in height. The corpses, if thrown into the channel at Calais, would form a bridge between France and England and separate the ocean from the North Sea by a weir. If only the heads of the men slaughtered in war were taken and placed side by side, a band would be formed reaching six times around the world.

Theatres and Consumption.

There can be no room for doubt that badly ventilated buildings offer one of the most favorable conditions for the development of consumption in the occupants thereof, nor can there be any doubt that, as a class, theatres are very illy-ventilated buildings, so that, in spite of Mr. Henry Irving's merriment over a letter to this effect, written to him by a physician, we must conclude that a theatre is not the most healthy place in which to pass an evening. Yet people will go to theatres and find much wholesome mental relaxation therein, so that it becomes most important to impress upon the proprietors thereof the importance of devoting a little more money to the acquisition of efficient ventilation and a little less to architectural effect, for it is absolutely true, as stated in the *Journal of the American Medical Association*, that if the money is freely supplied for the purpose, any given building can be adequately ventilated, just as certainly as it can be rendered safe against fire. But the money cannot commonly be spared for these objects—it is required to be spent upon some tower, pinnacle, or other architectural embellishment.

Cholera and its Prospects.

Although cholera is decreasing at Meshed, the fatal attacks having fallen to some thirty-five a day, yet the disease has extended over a wider area and has at last entered Russian territory in Europe. Passing in a western direction from Meshed, a number of towns have at intervals been attacked in the direction of Astrabad, and still further westward the disease subsequently appeared at Abasabad, on the southern shore of the Caspian Sea. But the disease also crossed the mountain frontier between Meshed and Russian Turkestan, making its appearance notably at Khaaka and Askabad. Then it followed the railway route, and has since been reported at Usun-ada, on the eastern shore of the Caspian. The passage across the Caspian from this point is not difficult to understand, and as a matter of fact the important port of Baku, in European Russia, situated on the western coast of the Caspian, soon became attacked. Thus the southern portion of the Caspian Sea has been invaded at three points, and not only so, but the disease would appear to have extended in a southwesterly direction from Baku towards the Turkish frontier, for the town of Shusha, in the province of Elizabetopol, is now also a seat of cholera. There is, further, the presence of cholera in Samarkand and Bokhara, in both of which Russo-Asiatic states a number of towns have been attacked, and between which and Russia in Europe there is a not unimportant traffic. No trustworthy statistics are as yet available as to the attacks or fatality, but it is certain that in Russian territory there have been several hundred deaths from cholera. The town of Bokhara is said to have escaped, and its escape is attributed to the advanced sanitary measures which have been steadily adopted there since last December, the action having been taken at the instigation of the resident Russian diplomatic agent. The immediate interest in this intelligence lies, for us, in the prospect of a European invasion of cholera. The route which the disease has taken is by no means a fresh one; and it is, besides, one that, by reason of its traditions as to Oriental plague in and about Astrakan, is known to be one where the conditions favorable to the diffusion of cholera have long since abounded and still abound. It is, at the present moment, impossible to forecast the future. But without professing to any prophetic accuracy, we may say that there are substantial reasons for fearing that eastern Europe is in risk of cholera invasion. At the same time we may add that, unless the extension becomes more rapid than it has been during the last month, an even greate danger to Europe may lie in a recrudescence of the infection next year than any wide prevalence this year.—*London Lancet*, July 2, 1892.

SPECIAL REPORTS

State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania.

PRESIDENT,
J. H. McCLELLAND, M.D., of Pittsburg.
SECRETARY,
BENJAMIN LEE, M.D., of Philadelphia.
PEMBERTON DUDLEY, M.D., of Philadelphia.
J. F. EDWARDS, M.D., of Philadelphia. GEORGE G. GROFF, M.D., of Lewisburg.
J. H. McCLELLAND, M.D., of Pittsburg. S. T. DAVIS, M.D., of Lancaster.
HOWARD MURPHY, C.E., of Philadelphia. BENJAMIN LEE, M.D., of Philadelphia.
PLACE OF MEETING,
Supreme Court Room, State Capitol, Harrisburg, unless otherwise ordered.
TIME OF MEETING,
Second Thursday in May, July and November.

Minutes of the Twenty-first Regular Meeting of the State Board of Health of Pennsylvania.

The Twenty-first Regular Meeting of the Board was held at Harrisburg, May 13, 1892, at the Supreme Court room, at 8 P. M.

Present, Dr. J. H. McClelland, President, in the Chair. Howard Murphy, C. E., Dr. J. F. Edwards, Dr. Pemberton Dudley, Dr. George G. Groff and Dr. Benjamin Lee, Secretary. The President made a few appropriate remarks on again meeting the Board after an absence of several months in Europe. He had just had an interview with His Excellency Governor Pattison, who had requested him to summarize his observations on foreign sanitary methods and to submit them to him for his information. He had promised to do this through the State Board of Health.

The Secretary stated that Dr. S. T. Davis had written, regretting that he would not be able to be present.

An Order of Business presented by the Secretary was adopted as the order of the day.

On motion of Dr. Groff, it was resolved that in reading the minutes of the last meeting only the headings of that portion prior to new business be read, but that from this point the minutes be read in detail.

The minutes of the special meeting, held March 28, 1892, on the train between Williamsport and Erie, and at the city of Erie, were then read as above indicated and approved.

The Secretary then presented his report as follows:

The Secretary begs leave respectfully to report that the following matters which were referred to him for action at the last meeting have received his attention. Namely:

The endorsement of the Pure Food Bill now before Congress.

The establishment of relations with the superior Board of Health of the Republic of Mexico.

Recommendation to the Board of Health of Lancaster, with regard to classing membranous croup as a contagious disease.

BAGGAGE FROM INFECTED SHIPS.

Communication to the Health Officer of New York, with reference to the disinfection of baggage on infected ships.

Resolution commending the public-spirited action of Mr. Gillingham, of Villa Nova, in sacrificing his herd on account of tuberculosis.

Resolution deprecating the action of the Councils of Lock Haven, in dissolving the City Board of Health. Reference of the question of the danger of typhus fever from Mexico, to the National Conference of State Boards of Health.

Request to the Adjutant General of the State for hospital tents, to be used as emergency hospitals.

The following is a résumé of the official acts of the Secretary since the last meeting:

SANITARY INSPECTION OF ERIE.

1. Immediately after the adjournment of the Board at Erie, on March 31st, accompanied by the members and medical inspectors present and several city officials, he had made a sanitary inspection of that city, visiting the water-works and following the general plan of the sewerage system. They found, among other things, that the sewerage of the city was so arranged as constantly to pollute the water-supply to a greater or less extent. A fuller report on this subject would shortly be received from the engineer member of the Board who participated in this inspection and also made a special investigation subsequently.

SMALLPOX AT CLARKE'S VALLEY.

2. On the 24th of March smallpox was reported at Clarke's Valley, Schuylkill County. Dr. Murray Weidman, Medical Inspector of the Schuylkill district, was at once instructed to investigate, and to enforce stringent precautions if the report was found correct. He verified the diagnosis of the attending physician, Dr. E. Phillips of Tower City, and through his advice the patient and exposed persons were isolated at the cottage where the outbreak occurred. Five cases of confluent smallpox occurred in this family, three of which proved fatal. Dr. Weidman's report had only just been received, having been sent to Erie during the Sanitary Convention, and held there by mistake. Dr. Phillips now reported the disease as being stamped out, and the cottage thoroughly cleansed and fumigated. It was, however, proposed to fumigate the house again. The wise precaution had been taken of killing a cat and a dog which had been exposed to the infection.

SANITARY LEGISLATION FOR THE PROTECTION OF LIVE-STOCK.

3. A communication was read from the Chairman of the Committee on Legislation of the American Live-Stock Association, the office of which is at Springfield, Illinois, with reference to needed State and National Legislation for sanitary purposes. The Secretary had replied, stating that it was highly desirable that the States should adopt stringent regulations and legislation for the management of herds, the care of dairies and the protection of dairy products from a sanitary point of view, and that the right to condemn and slaughter animals discovered to be affected with contagious disease, should be conveyed to appropriate responsible officers.

QUARANTINE OF SCHOOL TEACHERS.

4. Dr. A. Mullhaupt, Chairman of the St. Mary's School Board, Elk County, had requested the Secretary to inform him as to the length of time a school teacher, who had an attack of scarlatina, should quarantine herself. He had replied that it would be unsafe for a teacher to resume her duties after an attack of scarlatina within six weeks from the height of the disease, and then only on the certificate of a physician that desquamation was completed, and after proper fumigation of her room. He had also referred him to circular No. 33. Referred to New Business by request of Dr. J. F. Edwards.

PUBLIC FUNERALS IN CONTAGIOUS DISEASES.

5. A communication had been received from Dr. Z. Taylor Chrisman, of Warick, Chester County, inquiring as to the law governing the burial of bodies, dead of contagious diseases. The church authorities of that place has prevented an attempt to hold a public funeral in the church, in the case of a child which had died from diphtheria. In reply, the Secretary stated that the Legislature had hitherto refused to enact any law governing this subject. The Board had adopted a regulation which it was hoped would eventually have the force of the law, although it could not be enforced until it had been published in all the County towns. He cordially approved the action of the church authorities in this matter and sent circulars Nos. 29 and 31 for distribution.

DIPHTHERIA COMMUNICATED BY CLOTHING EXPOSED TO MEMBRANOUS CROUP.

6. A sad case, showing the infectioness of diphtheria, had occurred recently at Royer's Ford, Montgomery County. A parcel of clothing worn by a child which had died three months previously from membranous croup in Philadelphia, the child's father having

died of so-called tonsilitis, about the same time, had been sent to a family at this place, the result being that cases of diphtheria occurred in the family—two of which proved fatal.

INVASION OF HUNS AT BRIDGEPORT.

7. A complaint had been received from Bridgeport, Montgomery County, that a large number of Italians were occupying a house in that village, the lower rooms of which were being maintained in such a filthy condition as to be little better than a pig-sty. The Secretary had replied that the Burgess possessed ample power to remedy these unsanitary conditions, and sent copies of the Model Ordinances, the adoption of which he urged.

NATIONAL CONFERENCE OF STATE BOARDS OF HEALTH.

8. The Secretary stated that the questions for discussion at the National Conference of State Boards of Health, at Lansing, in June, which he had suggested in behalf of the Board, were as follows : " In view of the increasing frequency of communication between the Republic of Mexico and the United States, and of the constant prevalence of typhus fever in the former country, is there such probability of the introduction of that disease into the United States as to make it important for health officers along the Southern frontier to use especial vigilance on that account? "

" Is the disinfection of baggage essential to effective quarantine ?"

SMALLPOX AT TITUSVILLE.

9. The case of smallpox reported at the last meeting at Titusville, Crawford County, in the person of an immigrant-child, which had arrived at New York two weeks previously, on the steamer " Diana," and which was therefore reasonably supposed to have been caused by infected clothing, had recovered. The Board of Health had promptly isolated the case, adopted the precautions recommended in the circular of the State Board, and stamped out the disease. The Health Officer of the Port of New York had been communicated with, in accordance with the resolution then adopted on the subject of the disinfection of the baggage of immigrants landing from steamers on board of which contagious diseases had occurred.

PIGGERY NUISANCE AT CHESTNUT HILL.

10. A report of a nuisance from a piggery at Chestnut Hill, Montgomery County, causing sickness at the Bethesda Home for Friendless Children, had been received. The Secretary had sent the usual forms for affidavit but no further complaint had been made.

INSPECTION AT OGONTZ.

11. A complaint that diphtheria existed in a house at Ogontz, Montgomery County, was reported at the last meeting. Deputy Medical Inspector Cooper had also reported that a toll-house, immediately adjoining the house in which two fatal cases of diphtheria had occurred, was in a very unsanitary condition in every respect, and Medical Inspector Atkinson was instructed to visit the place. His report corroborated Dr. Cooper's statement, that it was unfit for habitation, and he condemned the building, urging its removal. He also pointed out that a neighboring swamp required drainage, being likely to cause malaria. Since this inspection the Secretary had been advised by the local inspector that the toll-house had been vacated preparatory to its demolition, the swamp in question drained and other sanitary defects remedied.

POLLUTION OF CANAL BASIN AT MUNCY.

12. A complaint had been received from a resident of Muncy, Lycoming County, that a canal basin at that place was being polluted by refuse from a woolen mill, causing a sickening odor, and he thought much sickness. Dr. Groff stated that he knew the locality well and did not think this a very serious matter. The Secretary had replied, stating that the Borough authorities had ample power to abate such a nuisance, and advising that men be elected to office who value human life more than dollars and cents. He also sent the usual forms for complaint.

INFECTIOUSNESS OF DEAD BODIES.

13. A physician of Selinsgrove, Snyder County, had written with regard to a transportation permit for a child which had died of scarlet fever five years previously, inquiring how long after burial in such a case the Board considered that a body was capable of conveying

infection. He had refused a certificate in this case, but the parents were willing to have the body sealed hermetically. In reply the Secretary stated that the Board had never adopted any formal decision covering this question, and he doubted whether it were possible to do so. His own belief was that infection was possible until decomposition was complete. If, however, the parents were willing to follow the stringent precautions specified in his letter, he would grant the necessary permit. This assurance was given and the permits for this body, as also for an infant, were granted. Referred to new business.

SMALLPOX IN PITTSBURGH.

14. Mr. W. F. McKelvey, Superintendent of the Bureau of Health of Pittsburgh, had recently reported three cases of smallpox in that city, two of which were still under treatment. The cases were promptly isolated, premises disinfected, and vaccination performed.

ESTABLISHMENT OF BOARD OF HEALTH.

15. On request of a physician of McKeesport, the Secretary had sent documents, rules and regulations to him, and a Board of Health had been established in that Borough.

BACTERIOLOGICAL EXHIBIT AT WORLD'S COLUMBIAN EXPOSITION.

16. The Secretary had communicated with Dr. John S. Billings, of Washington, D. C., as to whether it were practicable to make a Bacteriological Exhibit at the World's Fair. Dr. Billings had replied that such an exhibit for three weeks would probably cost from $1,000 to $1200. He suggested that a complete portable apparatus, costing about $150, free of duty, might be purchased by the Board, which could be shipped from place to place as required throughout the State. This could form a portion of the Exhibit of the Board at the World's Fair, and would undoubtedly be of much interest to other health organizations. The Secretary had, therefore, made a requisition for a set of apparatus for examining potable waters, on the Secretary of the Commonwealth. Should this fail to be honored he would ask the Board for permission to purchase such an outfit. Referred to new business.

A SOCIETY FOR PREVENTION OF TUBERCULOSIS.

17. The Secretary reported that a Society for the Prevention of Tuberculosis had just been formed in Philadelphia. It was organized April 22d, and held its first meeting May 6th. The Society included several well-known medical and other residents of Philadelphia of both sexes.

INSPECTION OF DEVON INN.

18. At the request of Mr. Howard Murphy, the consideration of the Devon Inn drainage question was referred to new business.

INSPECTION AT NEW HOPE.

19. By request an inspection had been made at New Hope, Bucks County, by Medical Inspector Atkinson, owing to an outbreak of typhoid fever, which had attacked an entire family. The inspector reported that all the cases recovered after several weeks' illness. He found that the well of water used for drinking purposes had been contaminated by roof and surface drainage. Dr. Leffmann, on examining a sample of this water, pronounced it unfit for use. The inspector recommended the remedying of certain sanitary defects as regards cesspools and privy, which were agreed to. The well which had caused the mischief had been thoroughly cleansed.

The President at this point stated that he had received a complaint respecting a nuisance at Homewood, a suburb of Pittsburgh, which he had omitted to bring to the meeting. The matter was referred to the Secretary for action.

SANITARY DAYS.

20. His Honor, the Mayor of Lebanon (Mr. J. W. Harbesen), had suggested to the Secretary the expediency of establishing a "Sanitary Day" in May and one in September of each year, throughout the State. He considered that such action would benefit the State more than the "Arbor Days." The Secretary had replied that while he approved the suggestion, he thought such action should emanate from the Legislature, the Board of Health being the youngest, and in the opinion of many, the least important department of State government. To this His Honor answered that his meaning was that the Board should suggest the step

to the Legislature, and that his opinion of the value of a Health Department differed from that too often held. Referred to new business.

POULTRY SHIPPED.

21. Dr. Heber Roberts, Health Officer of Butte City, Montana, had communicated with the Secretary, asking his opinion as regards the shipment of undrawn fowls. The Secretary had replied that the best evidence he had been able to obtain on the subject favored the view that undrawn poultry was less likely to become infected with the bacteria of putrefaction than that which had been drawn, thus exposing cut surfaces through which absorption could more readily take place.

NOTIFICATION OF ARRIVAL OF INFECTED IMMIGRANTS AT NEW YORK.

22. The Secretary submitted a list of steamships which had arrived at the port of New York since the last meeting, on board of which there had existed contagious diseases, as received from the Commissioner of Immigration. The Burgesses and health authorities throughout the State had been notified of the arrival of immigrants at their several towns per such steamships, except in the cases of measles, which he had notified the Commissioner he need not in future report. Referred to new business.

NOTIFICATION OF INFECTED IMMIGRANTS AT PHILADELPHIA.

23. The Secretary stated he had requested the Commissioner of Immigration for the port of Philadelphia to notify him in regard to the arrival of infected steamships, as was done by the New York Commissioner. No reply had as yet been received.

DROWNING CIRCULAR.

24. Circular on the "Treatment of the Apparently Drowned."

CIRCULAR ON S. P. A.

25. Circular on "Sanitary Protective Associations."

CIRCULAR ON PREVENTION OF BLINDNESS.

26. Circular on the "Prevention of Blindness." The Secretary reported that all these circulars were in the hands of the printer and would shortly be issued.

BOARD OF HEALTH OF BRADFORD.

27. The Secretary presented the report of the Board of Health of Bradford, McKean County. Referred to new business.

BOARD OF HEALTH OF READING.

28. The report of the Board of Health of the City of Reading, Berks County, was also laid before the Board. The Secretary desired to call especial attention to the admirable report on School Hygiene which it contained, by Dr. A. B. Dundor, member of the Committee on School Hygiene. Mr. Howard Murphy, C. E., suggested that the Secretary request that a copy of this valuable report be obtained for each member of the Board.

INSPECTION AT LANSDOWNE.

29. A report from an inspection in regard to the disposal of the contents of a cesspool at Lansdowne, made by Medical Inspector Atkinson, was read. The inspection revealed the fact that while the complaint was well founded, every resident in Lansdowne who found it convenient adopted a course quite as objectionable in getting rid of his drainage. An abatement of this nuisance was ordered.

INSPECTION OF MILITARY ACADEMY.

30. A somewhat alarming outbreak of typhoid fever at the Chester Military Academy had resulted in an inspection of that institution by Medical Inspector Atkinson, and in company with Dr. John S. Billings, U. S. A., Director of the Laboratory of Hygiene of the University of Pennsylvania, and Dr. A. C. Abbott, his assistant. Dr. Atkinson reported that no local cause was found for the outbreak. The water used at the Academy was being examined at the Laboratory of Hygiene of the University of Pennsylvania. It was the opinion of the inspectors that the students had probably acquired the disease outside the institution.

PASSAGE OF FOOD AND DRUGS ADULTERATION BILL.

31. The Food and Drugs Adulteration bill, referred to at the last meeting, had successfully passed the Senate at Washington, and was now before the House.

SPECIAL REPORT ON FOOD ADULTERATIONS.

32. The Secretary presented a Special Report on the extent and character of Food Adulterations, received from the United States Department of Agriculture. This report was referred to the Committee on Adulterations, Poisons, Explosives, and other Special Sources of Danger to Life and Limb.

WRITTEN COMMUNICATIONS.

33. The total number of written communications received by the Secretary, since the meeting in November last, was 1,208, and the total number sent 948.

CIRCULARS DISTRIBUTED.

34. The total number of circulars issued since the meeting in November was 15,939, and of boxes of complete sets of circulars 1,032.

ADDITIONS TO LIBRARY.

35. There had been added to the Library during the same period 58 books and 14 pamphlets. Of this number 49 books had been received as exchanges, and 9 had been purchased: 13 pamphlets had been received as exchanges, and one purchased.

Reports of standing committees being now in order, the Executive Committee (Dr. Pemberton Dudley, Chairman) reported that it had held three meetings since the last regular meeting of the Board, at which accounts, represented by vouchers Numbers 487 to 524, had been audited and approved, the amount expended having been $2,018,97. The report was accepted and approved.

REPORTS OF STANDING COMMITTEES.

Dr. Benjamin Lee, Chairman of the Committee on Registration and Vital Statistics, reported that a recent investigation into the question of the mortality from tuberculosis, in Philadelphia, by Lawrence F. Flick, M.D., showed a decided and progressive diminution of percentage of mortality from this disease since the year 1885, when the doctrine of its contagiousness began to be generally adopted. The report was approved and accepted.

Dr. J. F. Edwards, Chairman of the Committee on Preventable Diseases, Disinfection and Supervision of Travel and Traffic, stated that as editor of the *Annals of Hygiene* his committee made a report through that organ every month, and he had therefore no special report to present. The statement was accepted.

Mr. Howard Murphy, C. E., Chairman of the committee on Water-Supply, Drainage, Sewerage, Typography and Mines, reported verbally that with regard to the inspection at Erie, plans of the sewerage system and water-works had not as yet been obtained, and he was not therefore in a position to make a complete report on this subject. He would, however, request the Board under the head of new business, to forcibly express itself against this system of having the outfall of the sewerage so dangerously near the intake of the water main. Referred to new business.

With regard to the Devon Inn Drainage case, he would also prefer that to be referred to new business. Referred to new business as desired.

The subject of abandoned canal beds in Pennsylvania referred to his committee at the last regular meeting, had received some attention. He had conferred with one of the head officials of the Pennsylvania Railroad Company in the matter, but was not yet fully prepared to report thereon. He had conferred with Dr. Henry Leffmann, with reference to obtaining samples of water for analysis. There had been considerable risk in getting these specimens of water conveyed safely on the railroads, owing to employés tampering with them. Dr. Leffmann now proposed to have all these demijohns enclosed in cases, with a padlock attached. He would request that the question of appointing two engineer inspectors be referred to new business. Referred accordingly

The report was accepted, with the suggestion that it be reduced to writing and sent to the Secretary. Dr. George G. Groff, Chairman of the Committee on Public Institutions, reported verbally. He suggested that Nos. 26 and 33 Circulars on School Hygiene be revised so soon as the present editions were exhausted. The matter of revision of these circulars was referred to new business.

The report was approved with the request that it be reduced to writing and submitted to the Secretary. Dr. Pemberton Dudley, Chairman of the Committee on Adulterations, Poisons, Explosives and other special sources of danger to life and limb, reported verbally that the question of the ingredients used in coloring butter had been investigated to some extent. He found that the coloring of butter by anatto was probably not injurious to health, there being only a few drops used in a churnful of butter.

The report was approved, with the request that it be reduced to writing and submitted to the Secretary.

REPORT OF COMMITTEE ON SANITARY CONVENTION.

Reports of special committees being in order, the Secretary presented the report of Dr. S. T. Davis, Chairman of the Committee on Sanitary Convention. The report stated that the Sixth Annual Sanitary Convention, held at Erie, March 29th to 30th, had been one of the most successful conventions yet held. Great credit was due the Secretary and the gentlemen composing the local committee, in having arranged such an excellent programme.

The committee suggested that the proceedings form a portion of the annual report of the Board.

The annual address before the Board was delivered by Dr. Peter H. Bryce, of Toronto, Secretary of the Provincial Board of Health of Ontario, and was listened to with deep interest by a large audience. Erie had gone on record as the first city, since the inauguration of the Board in Philadelphia, that had offered a banquet to the members of a Sanitary Convention.

PRESENTATION OF ACCOUNTS.

The Secretary then presented accounts, vouchers numbered 523 to 524, amounting to $102.81, which had been audited and approved by the Executive Committee. The accounts were on motion approved.

New business being in order Dr. Pemberton Dudley offered the following resolutions:

NEW BUSINESS. TUBERCULOSIS IN PENAL INSTITUTIONS.

Whereas: Modern researches have demonstrated the contagious character of lung tuberculosis (consumption), and, whereas, this disease is known to be unduly prevalent in the penal institutions of this and other States; therefore

Resolved, That the Committee on Public Institutions and School Hygiene, in conjunction with the Secretary, be requested to consider the expediency of formulating instructions to the authorities of the prisons, jails, and reformatories of this State, by which to secure precautions for preventing the spread of the disease among their inmates. The resolution was adopted.

Dr. J. F. Edwards, Chairman of the Committee on Preventable Diseases, Disinfection and Supervision of Travel and Traffic, moved that the correspondence relating to the consideration of the quarantine of school teachers, public funerals in contagious diseases, the length of time a body dead of contagious disease, will continue to be infectious, and "Sanitary Days," as proposed by the Mayor of Lebanon, be referred to this committee, with instructions to subsequently report thereon.

The correspondence on these subjects was referred accordingly, the committee to report on the same at its convenience, except with regard to the establishment of "Sanitary Days," on which subject it was instructed to report at the next regular meeting.

On motion of Mr. Howard Murphy, C.E., it was ordered that a copy of the minutes of the previous meeting be sent to each member of the Board, together with the copy of the Order of Business, prior to each meeting. On motion of the same gentleman, the Secretary was requested to ask the Board of Health of the city of Reading to furnish each member of this Board with a copy of their last annual report, containing Dr. A. B. Dundor's valuable report of school inspection.

DEVON INN DRAINAGE.

The subject of the Devon Inn Drainage was now called up by Mr. Howard Murphy, C.E. for consideration. He read the report of Medical Inspector Atkinson, made April 19th last. The inspection revealed the fact that little of an effective character had been done to abate the long-standing nuisance, and the Inspector felt compelled to renew his "condemnation of the entire place," so far as its drainage system was concerned. This matter had now been under the Board's consideration for over two years. Owing to the removal of the outlet to a point below the property of Mr. C. Davis English, who had been the chief complainant, and the partial abatement of the nuisance so far as his premises were concerned, that gentleman might possibly be ready to withdraw his complaint. This, did not however, relieve the Board of its responsibility of the matter.

A conference between the engineers who had been consulted in this matter and himself, at New York, had been proposed, but nothing had been done. He would suggest that the question remain in abeyance a little longer, and then, if the orders of the Board had not been obeyed, the Secretary carry out his instructions and institute legal proceedings against Messrs. Coffin & Altemus, the owners.

NOMINATION OF ENGINEER INSPECTORS.

In regard to the nomination of Engineer Inspectors, Mr. Howard Murphy states that he had deferred acting on behalf of his committee in consequence of the absence of the President in Europe, as he desired that gentleman to make a nomination for the Western part of the State. He moved that nominations for the two Engineer Inspectors be now made. It was carried.

The President proposed the name of Colonel T. B. Roberts, C.E., of Pittsburgh, as Engineer Inspector of the Board for the Western part of the State.

Mr. Howard Murphy, C. E., proposed the name of William H. Boardman, C.E., of Philadelphia, as Engineer Inspector of the Board for the Eastern part of the State. The nominations were, on motion of Dr. Dudley, approved, and the President announced the nominees duly elected as Engineer Inspectors of the Board.

In regard to his action in relieving the United States Commissioner of Immigration from the labor of issuing notifications to him on the arrival of steamships infected with measles only, the Secretary had stated that he had done so for two reasons: first, because of the comparatively low mortality rate of that disease, and, secondly, because he felt that to attempt impossibilities is to invite ridicule and forfeit public confidence. While he believed that something might be accomplished in the prevention of scarlet fever, diphtheria and smallpox by this means, measles was already so universally prevalent that it was useless to make efforts to shut it out. At the request of Mr. Howard Murphy, C. E., the President transferred his name from the Committee on Public Institutions and School Hygiene to the Committee on Adulterations, Poisons, Explosives and other special sources of danger to life and limb, and that of Dr. J. F. Edwards from the latter committee to the former.

RESOLUTION ON WATER-SUPPLY OF ERIE.

On motion of Dr. Pemberton Dudley, it was,

Resolved, That the reports of the Secretary and of the Chairman of the Committee on Water-Supply, Drainage, Sewerage, Topography and Mines, on the water-supply and sewerage of the City of Erie, leave no doubt in the minds of the members of this Board that the water supplied to the citizens for household purposes is constantly polluted to some extent and frequently seriously contaminated; and that the close proximity of the outlet of the principal sewer to the intake of the pumping station is fraught with great danger to the health of the city.

Resolved, That in the opinion of the Board the body of water known as the harbor, is of too limited capacity and too sluggish flow to constitute at once a receptacle of sewerage and a source of water-supply.

On motion of Dr. Groff, Chairman of Committee on School Hygiene and Public Institutions, it was ordered that Circulars Nos. 26 and 33, on School Hygiene, be revised, so soon as the present editions are exhausted.

The Board then on motion adjourned.

(Signed) BENJAMIN LEE,
Secretary.

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COMMUNICATIONS

Hygiene Among the Aborigines.

BY WILLIAM THORNTON PARKER, M.D., M.M.S.S.,
Beverly, Mass.,
Member of the Academy of Hygiene, France; late Acting Assistant Surgeon U. S. Army;
formerly Surgeon U. S. Indian Service.

IN considering the manners and customs of our Indians, we must remember that while the term Indian conveys to our mind a certain idea as to general characteristics, Indian tribes differ from each other in appearance, manners and customs as widely as the tribes of "pale-faces" differ from each other. Writers, in describing our aborigines, have often made this mistake, detailing the customs of one tribe as if they were descriptive of all Indian tribes. We can readily understand how so many mistakes are made in this manner. This is well illustrated when we consider the subject of the disposal of the dead. One tribe may dispose of them by fire on a funeral pile; another by preparing them to become mummies, then by burial in caves in sitting postures; still others elevate their dead on platforms or in trees, and perhaps the more civilized encoffin them in birch-bark and bury in the earth. Many characteristics of Indians are found in most all of the tribes, while some particular features are found only in certain tribes.*

The custom of building large fires in the vicinity of newly-made graves may suggest the idea of the hygienic value of fire. How much it acts as a powerful disinfectant in preventing the spread of contagious disease we are not prepared to state, but that it has some such value there can be no doubt.

In making a study of hygiene among the aborigines we shall find much that is interesting. We shall be able to discover the customs which very likely have existed among all primitive peoples. Our native aborigines are undoubtedly superior to any others in existence to-day. Mentally and physically, and we may add morally, too, they are superior to the natives of Central America, South America, Africa, the Islands of the Pacific, and of Asia. To begin with, we find the North American Indian an intelligent, religious, brave and friendly being, possessing strong parental affection, generosity and courage of a high order. With such attributes it is not surprising that we find in him sufficient knowledge to provide for himself suitable food, clothing and shelter. We could also demonstrate that his knowledge of the treatment of disease is of sufficient worth to attract attention. We find that writers who have witnessed the ceremonies of the magicians imagine them to be the true medicine men or doctors of the tribe, thereby totally losing sight of the fact that medical and surgical art among our aborigines contain scientific truths which demand recognition. We must remember that the Indian is very observing and quick to make use of any facts which he may consider of value.

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*In the March number of the Annals of Gynæcology and Pædiatry I have published an article "Concerning American Indian Womanhood," where I have in detail referred to matters relating to the hygiene of women. It will be found in the paper referred to that "we are forced to concede that these people we regard as savages possess knowledge, at least on matters of hygiene, if not in medical art, quite worthy of attention."

The ordinary home of most of the Plains Indians is called by them a "tupe." It is a conical tent, made of dressed buffalo skins, or of late years, of cotton cloth, supported on a framework of light peeled poles, spread out at the bottom in a circle, and crossed near the top. It is from twelve to eighteen feet in diameter, and from twelve to fifteen feet high. The covering, of whatever material, is cut into the form of a cone, and sewed tightly, except one straight seam from top to bottom, which is fastened by a lacing from the top to within four or five feet from the ground. The opening thus left is the doorway, the door itself being a buffalo robe or piece of cloth fastened above and left to hang loose, except in bad weather, when it can be tightly stretched by thongs attached to the lower corners.. All well-constructed "tupes" have an arrangement to prevent the wind blowing down through the opening in the top. These tupes were often ornamented with paintings representing the history of the head of the lodges, or with representations of various kinds, supposed to be efficacious in keeping away evil spirits." * These tupes are easily taken down and can be quickly placed in position by those who are accustomed to them. The fire is built in the centre; the smoke is supposed to escape through an aperture in the top. The tupe is admirably adapted to the wants and necessities of the Indians, its shape secures it from being overturned by winds and storms, and it can be kept warm and comfortable even in the coldest weather by very little fuel, a most important desideratum on the treeless plains. The other kind of lodge is called a wicky-up—temporary hut constructed ot small freshly cut poles or wands, large ends stuck in the ground, small ends bent over and fastened together. These he covers with skins, or blankets, or cloth ; the interior is only three or four feet high. The tupe is the permanent residence of the Indian, and the wicky-up the make-shift sleeping-place on hunts and marches. No matter how tired after the day's march, the Indian will not sleep in the open air if he can possibly avoid it ; he must be protected from above. Whether this is a superstition or a habit derived from long ex-

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* Colonel Dodge in "Our Wild Indians."

perience, it is difficult to state. When asked about it they reply that it is not good to sleep out. The Indians use pillows when at home in their tupes, made of rolled buffalo robe or of the skins of smaller animals, such as the fox or badger, stuffed with grass. Their beds are piles of buffalo robes or blankets spread upon the ground as close as possible to the outer circumference of the tupe. These beds serve the double purpose of sleeping-places by night and seats and lounges by day. They are not "made up," though on fine days the bedding may be taken out, shaken and spread in the sun.

The Chippewa wigwam is built of birch-bark, secured to strong wooden frames, about eight feet in height and twenty to thirty feet or more in circumference. Platforms for sleeping-mats two or three feet high circle the wigwam, a bare place in the centre being left for the ever-burning fire, an aperture in the roof permits the escape of smoke and secures good ventilation. The reed mats used for carpets are beautiful specimens of Indian work. These wigwams are considered very comfortable even in the coldest winter nights, when the temperature is many degrees below zero. The government has furnished the Indian with windows and doors for his log-cabin, and while with some Indians these homes are considered desirable, they are certainly not as healthy as the tupe or wigwam. These tupes of the Indians are continually being moved about. The squaws attend to the loading and unloading of camp equipage and supplies. Camps are arranged with some degree of order, the "Council Lodge" and tupes of the chiefs and principal men being pitched in the centre, enclosing a space greater or less according to the number of the lodges. To the rear of each chief's tupe were the lodges of his followers. The inner circle was the public space, from which were made by criers all announcements of

CHIEF FAST THUNDER'S CAMP.

orders and discourses of chiefs and council, notice of movements, and, indeed, everything of public interest. This was the loafing and lounging place for all, as well as for ceremonial dances, etc. The Indian is naturally hospitable, and will share whatever he has to eat with friends or visitors. There are no regular hours for meals, nor is there, as a rule, more than one meal a day. A pot or kettle of meat is put on the fire; when sufficiently boiled it is placed in the centre of the floor, and the inmates of the tupe, crowding round, help themselves with knives or fingers. Some few of the more advanced now use tin or delf plates. Until within a few years, dried buffalo meat was used almost universally in lieu of bread, but the issue of flour, meal and baking power by the Indian Department, have civilized them so far that bread is almost an absolute necessity. Many of the squaws have learned to make quite good biscuit. "The Indians hold the maize, or Indian corn, in great veneration. They esteem it so important and divine a grain that their story-tellers invented various tales, in which this idea is symbolized under the form of a special gift from the Great Spirit. A good Indian house-wife provides a goodly store of corn to exercise hospitality and duly honor her husband's guests."—*Schoolcraft.*

The contact with the pale-face has brought about changes in clothing. The Indian retains his well-fitting moccasins, but the handsomely-beaded leggings and the breech clout have been discarded, and in place of them we find them wearing drawers and trousers of modern materials and fashion. The broad belt has been discarded and suspenders are now worn, and instead of the costly hunting-shirt, the "boiled shirt" of civilization and the white man's vest are now universally worn. The blanket, which Indian pride carried with the dignity of the ancient Roman who once wore the toga, has given place to the conventional overcoat. The otter-skin head-gear has been replaced by the ugly Western hat, and in some cases the treasured moccasins have been sold or cast aside to encase the healthy, active feet of Indian braves in cowhide boots. The picturesque attire has so rapidly disappeared even from the Reservation Indians that we can only find some trace of native toggery by visiting a "Wild West Show."

One great stumbling-block towards success in protecting the physical condition of the Indian is to be found in the fact that from an out-of-door life of activity, with plenty of fresh game and wholesome food and clear water, and with a healthful tupe for his home, he has been placed in log-cabins, overheated with iron stoves, given the poorest quality of flour and salted meat, and, in exchange for an active life, one of idleness. Under these circumstances is it at all remarkable that mentally and physically, in some instances, he has degenerated. For the Indian, as well as for anyone else, idleness can act only as a serious injury.

Armed, clothed, housed and fed like our wild and erratic frontiersman the Indian has lost much of the old-time life and manner which made him a native American freeman in the literal sense of that term. In his native Indian life he was, indeed, a subject worthy of the artist's picturing, the poet's description, the philanthropist's interest and the brave man's respect. As he is now he cannot fail to inspire in every manly heart feelings of sincere sympathy and genuine regret at his miserable misfortune. If we can atone for the evil we have wrought we shall derive benefit from the sense of a duty undertaken even at this late day.

Boiled meat used to be the favorite food of the Indians of the plains. The Chippewas have venison, prairie chickens and maize, and understand the value of *broiling* meats, but boiling is less trouble for the squaw cooks, and so the Indian dietary is arranged accordingly. Col. Dodge declares that the Indian is a great epicure, knowing the choicest tit-bits of every animal and just how to cook it to suit his taste. The great fall hunts used to yield him the fullest enjoyment of his appetite. Then were the days spent in all the delights and excitement of the chase and almost all his nights in feasting and revelry. These were the times for "marrow gats," hump ribs" and "marrow-bones." The large bones of the hind-legs of the buffalo were thrown upon the glowing coals or hidden under hot embers, then cracked between two stones, and the rich, delicious marrow sucked in quantities sufficient to ruin a white man's stomach forever. Marrow-fat is believed by the Indians to be especially good for the hair, and during the feast the greasy hands are constantly wiped upon his head. The Indian is an enormous feeder, and well-nigh incredible stories are related of the amount of meat one can eat at a single meal.

The Indians understand the value of salt and use it freely, and are also fond of red and black pepper and of tea and coffee. Among Indian hunters the entrails are considered of especial value; bowels, stomach, liver and heart and lungs are all extremely desirable, even when raw. Dog-flesh is popular among all the Indian tribes. It is served cut up in large junks, with skin and hair and entrails all boiled in one huge pot. The Comanches are fond of horse-flesh. The turkey is not considered a desirable dish lest eating it should make the warrior cowardly. Some of our Indian tribes eat the hearts of their brave enemies when they kill them in the battle struggle. This is considered good medicine and is supposed to create additional courage in the partakers. An officer at Fort Bowie, Arizona, was killed while attempting to reach the fort. The Indians who overtook and captured him cut out his heart and ate it in the presence of the horrified garrison, who were powerless to prevent the terrible orgie. At war dances I have often witnessed the act in pantomime of killing and scalping an enemy and cutting out his heart and eating it raw. Even the gurgling noise of sucking up the blood was enacted with terrible distinctness.

THE latest thing in spittoons for consumptives is a pocket arrangement, made of cardboard, in the shape of a cigar-case. The cost of it is only about three and one-half cents, and it is intended to be burned when full.

DR. D. A. SARGENT, of Harvard, will send to the World's Fair a bronze cast of what he calls his "perfect man." The measurements are taken from his anthropometric chart, and the sculptor is a man named Noble.

Water-Cures.

BY JOSEPH F. EDWARDS, M.D.

WHILE I do not wish to lessen faith in the efficacy of the various "water-cures" throughout this country and Europe, I feel that the intelligent persons who regularly read THE ANNALS OF HYGIENE should have an intelligent understanding of the true relationship between cause and effect that obtain in these famed localities. I would not lessen faith, for each day that adds to my experience teaches me that faith is the most potent of all factors of human progress, be it faith in so-called

RUSSIAN JEWS DRINKING THE WATER AT CARLSBAD.

"cures" in one's self or in another. "Without faith there is no salvation" religion tells us, and we might almost say "without faith there is no cure." The power of unconscious will, or rather, perhaps, the unconscious will power of humanity has an immense influence over the physical workings of humanity. If one is told that a certain drug will produce a certain effect and, if, after taking the drug, he uses all his will power to try to prevent this effect, in many cases the usual result will not ensue. Here, of course, we have the result of the influence of conscious will power, but, in other ways, do we equally see the potency of unconscious mental control. Thus a person who considers himself fairly impartial mentally, will yet yield a condition of sickness to one physician with the same remedies that has resisted the efforts of another doctor in whom there was less implicit faith. Unconsciously to himself the patient has resisted the doctor in whom he did not have confidence, and this unconscious mental resistance has reacted unfavorably, or at least has prevented a favorable psychical influence upon the physical condition. Thus is it with most of the so-called cures, that is, to a certain extent. It is but rarely that a person visits Carlsbad or Saratoga, or any of the world-famed resorts without having previously made up his mind that he is sure to derive benefit therefrom. A moment's reflection will convince anyone of the correctness of this assertion, for if it were not that the invalid felt that he was going to be benefited, he would not seek the resort; hence a visit to one of these resorts is, first and foremost, beneficial because the individual himself feels that it is going be so, by which feeling the all-powerful influence of mental impression is enlisted to aid the other curative factors.

Let us analyze a visit to Carlsbad, for instance. A letter from a friend recently received outlines the routine there prescribed for him by his physician, and one cannot help, when reading these instructions, but admire the hygienic knowledge of these doctors of Carlsbad. Up early in the morning, to bed early at night; simple, well-cooked, nutritious diet; plenty of exercise, absence from the gluttony that has, at home, deranged the stomach, liver, bowels and kidneys; this, with *faith*, faith that the waters will do good; this followed by a trip to Switzerland, a sojourn among the mountains in the pure, bracing, invigorating air of this glorious country; all this has, is and ever will do much for suffering humanity. But of the waters themselves, are they not valuable? Yes, as an adjuvant; as a sole factor, no. The system that is loaded up with effete matter; the body that has eaten more than it can appropriate of an unwholesome diet, whereby every organ is choked and hindered and impeded in its functions, this body is purged, as it were, by any water that has an effect upon the stomach, the bowels, the liver and the kidneys. But if the methods of life were not first regulated, the waters would avail not.

This healthy, fresh, happy, contented-looking milk woman of Carlsbad does not need the waters; she is frugal; she has plenty of exercise; she does not overload and overwork herself. She is true to nature and nature in turn is true to her. Those who resort to these "cures" are, in nearly every instance, those who do not live as they should, and who did they but regulate their lives in accord with nature would have no call for such journeys. But humanity is not natural; the bulk of it is artificial, and such being the case these "water-cures" are of immense advantage to us. But let us rightly understand the relative importance of the various factors included in a trip, for instance, to Carlsbad, and to do so we will formulate them thus:

A CARLSBAD MILK WOMAN.

(1) Regulation of diet and habits of life.
(2). Change of scene and diversion incident to the journey.
(3) Freedom from business or household cares.
(4) The after-trip to the mountains.
(5) Faith.
(6) The use of the waters.

If then we have six factors in this, as in all other "water-cures," five at least are available to those whose limited purses deny to them extensive journeys, and these five are, we believe, the most important.

Proper Diet for Hot Weather.

BY DR. N. E. YORKE DAVIES.

A MAN would look very absurd if he were to appear on the streets wrapped in furs and cloaks in midsummer, yet while the heat of the body is better and more perfectly equalized by the food that is taken than by its external covering in the way of clothes, few people adapt their diet to any particular season of the year or its temperature. My opinion is that the physiology of food should be taught the rising generation as an important item of school life.

When I say that the physiology of food should form a part of every man's, and, I may add, more particularly of every woman's education, I mean that they should know what particular use each food is applied to in the economy, and what particular food is suited for intellectual work in contradistinction to muscular work; and further, what particular food is best suited to the requirements of the system in the different seasons of the year. Fewer wives would be widows and children orphans it the mistress of a household adapted or ordered her husband's food to meet his requirements, and made it, or saw that it was made, tempting and palatable. But what obtains now in most middle-class households? The husband comes home to dinner weary and hungry to find warmed-up meat, or a washy stew, awaiting him, or, worse still, an underdone joint and half-cooked vegetables. Perhaps this goes on day after day, and year after year, until some day or other an illness occurs, and his constitution, exhausted for the want of proper food to nourish his complex organism, succumbs to it.

In the houses of the very wealthy this state of things seldom occurs—perhaps it would be better if it occasionally did, for a life of indolence and ease would be lengthened by occasional starvation. (Half the illness that occurs at one season, I think I can safely say, is due to improper dieting taken at another.) We hear of people feeling weak in the spring, or suffering from those different ailments due to malnutrition, such as boils, skin diseases, obesity or debility. Now this would not be so if the person adapted his diet to his requirements and to the season. No sensible person would think of keeping a large fire burning in his room in the summer. If he did, he would undoubtedly soon feel the effect of it; but many a man who would feel himself insulted if he were not thought a sensible person, will eat in the summer to repletion foods the particular action of which is to supply heat in excess. Perhaps I cannot do better here than to explain that the foods that are converted into heat—that is, keep up the heat of the body—are starches, sugar and fat; and those that more particularly nourish the nervous and muscular system are the albumen and salts; and a perusal of, or reference to, the following table will show what these are, and also the amounts of the different constituents they contain. At a glance the reader will see that the largest proportion of summer food should consist of green vegetables, cooked or as salads; white or lean meats, such as chicken, game, rabbits, venison, fish and fruits.

TABLE SHOWING THE PERCENTAGE COMPOSITION OF VARIOUS ARTICLES OF FOOD.

	Water.	Albumen.	Starch.	Sugar.	Fat.	Salts.
Bread	37	8.1	47.4	3.6	1.6	2.3
Biscuit	8	15.6	73.4	73.4	1.3	1.7
Wheat-flour	15	10.8	66.3	4.2	2.0	1.7
Barley-meal	15	6.3	69.4	4.9	2.4	2.0
Oatmeal	15	12.6	58.4	5.4	5.6	3.0
Rice	13	6.3	79.1	0.4	0.7	0.5
Peas	15	23.0	55.4	2.0	2.1	2.5
Arrowroot	18	......	82.0	......	......	......
Potatoes	75	2.1	18.8	3.2	0.2	0.7
Carrots	83	1.3	8.4	6.1	0.2	1.0
Parsnips	82	1.1	9.6	5.8	0.5	1.0
Turnips	91	1.2	5.1	2.1	......	0.6
Cabbage	91	2.0	5.8	5.8	0.5	0.7
Sugar	5	......	......	77.0	......	......
Treacle	23	......	......	5.2	......	.....
New milk	86	4.1	......	2.8	3.9	0.8
Cream	66	2.7	......	5.4	26.7	1.8
Skim milk	88	4.0	......	6.4	1.8	0.8
Buttermilk	88	4.1	......	......	0.7	0.8
Cheese	36.8	33.5	......	......	24.3	5.4
Chedder cheese	36	28.4	.....	......	31.1	4.5
Skim cheese	44	44.8	......	......	6.3	4.9
Lean beef	72	19.3	......	......	3.6	5.1
Fat beef	51	14.8	......	......	29.8	4.4
Lean mutton	72	18.3	......	......	4.9	4.8
Fat mutton	53	12.4	......	......	31.1	3.5
Veal	63	16.5	......	......	15.8	4.7
Fat Pork	39	9.8	......	......	48.9	2.3
Green bacon	24	7.1	......	......	66.8	2.1
Dried bacon	15	8.8	......	......	73.3	2.9
Ox liver	74	18.9	......	......	4.1	3.0
Tripe	68	13.2	......	......	16.4	2.4
Cooked meat, roast, no dripping being lost; boiled assumed to be the same	54	27.6	......	......	15.45	2.95
Poultry	74	21.0	......	......	3.8	1.2
White fish	78	18.1	......	......	2.9	1.0
Eels	75	9.9	......	......	13.8	1.3
Salmon	77	16.1	......	......	5.5	1.4
Entire egg	74	14.0	......	......	10.5	1.5
White of egg	78	20.4	......	......	......	1.6
Yolk of egg	52	16.0	......	......	30.7	1.3
Butter and fats	15	......	......	......	83.0	2.0
Beer and porter	91	0.1	......	8.7	......	0.2

In the case of a man of ordinary size doing ordinary physical or mental work, this would represent an ordinary day's food for hot weather, as far as quantity and constituents are concerned:

Breakfast, 8.30 to 9 A. M.—Two cups of tea or coffee, sweetened with saccharine, one or two teaspoonfuls of cream in each; one ounce of dry toast, thinly buttered; four ounces of grilled or boiled fish, such as plaice, sole, whiting, haddock, cod, or trout, or four ounces of cold chicken, cold tongue, or of grilled steak or chop.

Lunch, 1.30 P. M.—Two or three ounces of cold mutton, beef, or lamb; three or four ounces of green vegetables, plainly boiled, plenty of green salad, made with vinegar, but without oil; four or five ounces of stewed fruit; water, or two or three glasses of pure dry Moselles or other Rhine wines.

Afternoon Tea, 4.30, if desired.—Two cups of tea as at breakfast; nothing to eat.

Dinner, 7 to 8.—Julienne, or clear vegetable soup; three or four ounces of fish; three or four ounces of any *red meat*, or of chicken, rabbit, game, or venison; six ounces of any green vegetable, with gravy from the meat only; four ounces of stewed fruit or of raw fruit; a little stale or pulled bread, and a small piece of cheese.

This diet may be varied as to hour; but three meals only should be taken daily, and only sufficient at each meal to satisfy appetite. Fruit may be taken at other times, and any quantity of fluid, so long as it does not contain sugar; any number of pleasant alcoholic and other beverages suitable for the hot weather, and particularly suitable for those who should not take quantities of sugar, will be found in a book I wrote two or three years ago.

Fruit is only beneficial in moderate quantity. If taken in excess, and out of proportion to other food, it is apt to derange the bowels and cause diarrhœa; more particularly is this the case if it is eaten underripe or overripe—in the former case, from its undue acidity; and in the latter, from its strong tendency to ferment and decompose in the digestive tract. Fruit diminishes the acidity of the secretion of the kidneys, and by virtue of this is advantageous in gout.

It goes without saying that more fluid is necessary in hot weather than in cold. Indeed, so long as it is a harmless fluid, I question whether too much can be taken. Fluid in this way is to the kidneys what fresh air is to the lungs, and the waste of meat not used in the system is carried off by its aid.

It would be no use advising those who take stimulants for the sake of their stimulating qualities, that spirits and beers, and certain wines, are too heating in the summer, and that, however suitable port, sherry, spirits, and beer may be in the colder months of the year, the most suitable beverages containing alcohol, for this reason, are those known as the light, dry Moselle wines. Even claret and Burgundy contain a large quantity of tannin, and taken in excess are therefore apt to disagree and derange the stomach. Where a nice dry Moselle is drunk in fairly moderate quantity no harm can accrue. Of course, the quantity that would apply to one person does not apply to another, and a free drinker would certainly not be satisfied with less than two bottles.

The man who lives to eat, drinks after his soup a glass of pale sherry;

after his fish, Rhine wine; with his joint, Burgundy and champagne; with the *entrées*, Bordeaux or Burgundy; with the ice, champagne or liqueur, and with his dessert probably some old crusted port. But the man who eats to live would be satisfied with one pint of dry and delicate white wine, such as I have previously indicated, to cover the whole of this *menu*.

In some houses people seem to take stimulants at all hours, and only the other day a nobleman told me that, visiting a certain house, his valet came into his bedroom at ten in the morning bringing a pint of champagne. On his telling him he did not want it, his valet said, "If your lordship does not drink it, they will think you are ill!" "His lordship" did not drink it, but the champagne did *not* go down to frighten his host. I imagine gout must be a permanent institution in that household, and that the family vault must be as well stocked as the wine-cellar.

In every well-appointed household the proper commencement of dinner (which should be the most important meal of the day) should be the old-fashioned dish of good soup, and for this reason: that it is necessary that the first food taken at dinner should be quickly absorbed, so as to stimulate the nervous system and give tone to the stomach. In this way the appetite is stimulated and the sense of taste made more keen. Nothing acts so beneficially for this purpose as a small quantity of good soup. The more important adjuncts are, of course, pleasant surroundings and cheerful companionship.

To maintain life at its highest standard and for the longest period should be the aim of every individual, and this can only be done by adapting our food to the requirements of the system and the time of the year. If the body is properly nourished, disease will not attack it; and if it does, will get no foothold. It is like an impregnable fortress—it may be assaulted, but it can not be taken.

But to get the economy into this state of perfection, it must be remembered that no more food should be taken than will be consumed in the operations of life, and no more stimulant than the amount previously indicated, so that no surplus of either shall remain in the body in the shape of excess of fat, or as waste, in the form of gout poison or acidity.

"Gluttony," says an old writer, "kills more than the sword." On the other hand, there is no reason why food should not be made as palatable as possible—in fact, the more palatable it is the better. It is not excess in variety of food that is injurious, but excess in quantity.

STATISTICS show that 47,000,000 of people die every year, and that to each and every one of these 47,000,000 must be allotted 2 x 6 feet of ground, making a total of nearly twenty-one square miles of the earth's surface that is each year taken up for burial purposes.

AN English court has lately imposed a fine of $750 upon a landlord for heedlessly stowing guests away in damp beds, thereby causing illness.

Exercise in Childhood and Youth.*

BY J. MADISON TAYLOR, A.M., M.D.

THE normal states of the infant are feeding and sleeping. There is little more needed during the first year of life than comfortable, clean surroundings and abundant food at suitable intervals, supplemented by ample rest. Plenty of air should be allowed and not much light. The little one should be left alone as much as possible. In certain foundling asylums abroad, I am told the babies are fed and put into well ventilated, darkened compartments immediately, and under this system they seem to do best. Distinct harm results from over-much attention, and the excitement which comes from fond parents or curious relatives is one of the most hurtful influences exerted in early infancy. Absolute freedom should be allowed to the limbs, yet it is true that certain savage nations keep their infants in rigid dressings until they are able to make attempts at walking, and among such there result exceedingly fine physiques. This custom on the part of these savages may reasonably be a hint to us that enforced rest to the limbs is wiser after all. Then, as the child gives distinct evidence of wishing to be more aggressive in its movements, it will probably be high time to encourage it. At any rate, in the second year freedom might be allowed, and a good plan is to place the infant upon a soft substance on an even surface, like the floor, and encourage all spontaneous movements, and to supply it with the simplest kinds of toys. Try few educational measures yet.

With the eruption of the first set of teeth, about the end of the second year, a more varied diet is admissible also a wider range of object lessons, though these should be still of the simplest. At the first plain indication of weariness the child should be encouraged to sleep. As the motor energies become more plainly manifested, so may they be cautiously aided and abetted. In all this be guided by the greatest caution lest unwise interference be hurtful. Take lessons from experience, especially of the natural prompting of the youngster, and beware of all fine-spun theories of childless philosophers and narrow-minded grandparents. Let it pull things about, and put them into its mouth. All animals wish to taste or put things to their mouth, because the lips are equipped with the most sensitive nerves, and here it can obtain most accurate impressions. The hands have not yet learned nicety of touch, but by handling blocks, etc., soon accuracy comes.

The eye in the child is a perfect organ, and so, indeed, is the digestive tract, with limitations, of course, as to capacity. Not so, however, the limbs and trunk, which have much to learn and large need for exercise. It is best that the objects which immediately surround the babe should be of uncomplicated shape and color, such as the dawning comprehension may compass and use for comparison as contact is had with more complex ones. Bear in mind that the best human animals come from simplest households, as nearly as possible to nature, whose phenomena offer the best object lessons. Civilized comforts and safeguards are not to be despised, but these should not offer elements of confusion. A child is best left much alone. Avoid artificial constraints. When wearied out with joyous spontaneous movements which quicken its circulation and expand its lungs, and when feasted with slow contemplation of surrounding objects, it should be able to lie down comfortably and sleep.

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* Part of a Lecture delivered at the Franklin Institute, Philadelphia. Reprinted from the *Medical and Surgical Reporter*.

By and by the bewilderment of early impressions will be replaced by a growing confidence in the maturing powers and values of surrounding objects. All childhood should be passed in a series of simple object lessons. Some small encouragement is very well, but no distinct teacher of any kind is needed until the motive powers are well established and a fair stock of intelligence has been acquired by unaided mental digestion.

Thus little by little stores of information may be acquired, a knowledge which is all its own, because come at through abundant slow contemplation in its own time and manner and by its own unaided powers. In the mere bodily activities a healthy child may be trusted to do enough and not too much. If urged beyond its own choosing, the element of excitement comes in, always a confusing factor in measures or results.

Soon the greatest joy will be to play with others of its kind. Impressions from inanimate and other objects will no longer satisfy. Then comes the period of childish games, when running, shouting, rolling about, give tone to muscle and prompt conduction to brain. The cerebral part of this partnership, by the way, is first largely limited to balancing and the motor functions generally. When in the course of progress a certain time comes, by common consent, wherein systematic teaching should be had, then must the bodily powers and parts receive the greatest scrutiny. No school system is adequate which does not consider the training of the body as of almost equal consequence with the mind. I venture to assert with small fear of contradiction that no school is fit for your children or for mine which does not supply intelligent medical supervision. Among the more comfortable classes this will be supplied by the family physician, who may have at one time or another sufficiently looked after our boys or girls. When this is not done among those who use the large public schools, a skilled medical supervisor should be provided who shall pass judgment upon every single scholar. Thus will be brought to light heretofore unrecognized weaknesses, and, moreover, a surprising number of deformities; or in the needful repetition of these examinations hurtful tendencies may be early recognized. In the matter of the eye supervision is becoming pretty generally exercised, and much good already accomplished thereby. Of even more importance, however, is the question of weak hearts, unsymmetrical backs and limbs, narrow chests and twisted pelves. Soon or late calisthenic exercises, military drill, class singing, or some systematic form of body training will be a regular part of the day's instruction in most schools. A steady advancement is being made in the wisdom of educational authorities in all lands. To be sure, we may never attain to that almost perfect system of education pursued by the early Greeks the products of which are types of physical and mental beauty which shall serve as models for all time. Then, the pedagogue, the man who walked and talked with his scholars, was equipped with wisdom as well as learning, and capable of intelligently directing the activities of his pupils in body as well as mind. We may hope to have more of this open air object teaching by stream and field, which now is used to supplement the didactic in many large schools and colleges. As parents become more thoroughly aware of the economic needs of educational measures, they will demand as much, or more, of physical care for their children at the hands of instructors.

Let us turn for a moment to the subject of spinal deformities. This is a common result of the ordinary school life, when either unduly prolonged or unprovided with proper safeguards in the way of daily supplies of opportunities for exercise. I quote from Dr. J. K. Young, a well-known orthopædist of this city: "The great majority of cases of this curvature originate in children from the age of five or six and upward and young persons who have been recently in school. This might be thought a mere coincidence, for the school period is necessarily that of development and curvature is a disorder of development. But there is evidence to show that school work and customs are genuine causes, not the sole causes certainly, but very prominent ones. The origin of latent curvature depends chiefly on two things, weakness of the muscles which support the spine and bad position of the body. Weakness, though not a necessary circumstance, is an extremely common and important one. A bad position constantly maintained will twist the most athletic frame."

Again, Dr. Buckminster Brown says: "A most pernicious habit, and one which I have very often noticed in school-girls, and less often in boys, is that while we are talking to them or during recitations, they stand on one leg. This position is assumed involuntarily, and it is almost always on one and the same leg to which the weight is thrown. The effect of this is easily understood. One side of the pelvis is lifted up, curving the spine on the loins; the opposite leg is advanced in front of the other, twisting the pelvis and rotating the vertebræ. Of course, the curve of compensation takes place between the shoulders; one is depressed, the shoulder blade gradually projecting, and with the change, and, in fact, assisting to produce it, occurs the spinal twist."

These various warping agents which are inevitable among children confined to the school seats, or to the small variation of standing at their tasks, produce a large amount of actual damage, which remains as seed from which trouble grows, or simply impairs constitutional vigor. A large proportion of these are transient effects and overcome by wholesomer living later, hence never are recognized *per se*. Statistics on the subject are not yet sufficient; a single illustrative instance, however, is significant:

Guillaume, in 1864, examined the schools of Neufchatel, and found in 350 boys, eighteen per cent. affected with spinal warping, and among 381 girls, forty-one per cent. Careful searching in other schools would give at least analogous results. Now, what is the preventive for this? I quote the uniform opinion of several authorities, who one and all recommend varied muscular activities taken at suitable times as the most important measure. The best are vigorous out-door movements, games, leaping, running, climbing and all sorts of hard play, the more varied the better. These should, of course, be not unduly prolonged; especially for girls, it is harmful for them to make large scores at the skipping rope and long match games at tennis or even croquet. Indeed, the best forms of exercise for children are those which speedily shift from consecutiveness and interspersed with ample periods of rest. In girls there exists an inherent, ofttimes ineradicable indolence, a delight in sacrificing themselves to the proprieties, a misguided sense of decorum, which early hinders their right indulgence in active sports. In this their mothers encourage them blindly; even the best of mothers. This early subordinating of their physical impulses leads also to a disregard of the calls of nature, coupled with a silly squeamishness about attending to prompt evacuations and lays the train for lifelong discomforts and disturbances. No one but an active practitioner of medicine can believe how universal is the prevalence of torpid bowels and inactive bladders among the female sex. They seem to revel in the discomforts which arise from the neglect of these most vitally important functions. Again, this inactivity lessens their taste for water, since they rarely sweat as they should daily do. Hence, in unnumbered ways it is important to insist upon much activity among children.

The ordinary sports of boyhood and youth are invaluable. If ample opportunities by stream and field are afforded excellent results follow in healthful and beautiful forms. The tendency is, however, to work along lines of least resistance to specializations and to emphasize already well-marked aptitudes.

This pursuit of out-door competitive sports is necessarily limited to very few; Dr. Sargent says to probably less than one per cent. of our vigorous young men. Even among the members of athletic organizations only ten per cent. are really active. He goes on to say: "The cause for so little general interest in athletics is due to the increasing tendency with us, as a people, to pursue sport as an end in itself rather than as a means to an end." In making excellence in the achievement the primary object of athletic exercises we rob them of half their value in various ways—by (1) increasing the expense of training; (2) by increasing unduly the time devoted to practice; (3) by reducing the number of active competitors; (4) by relying upon natural resources rather than upon cultivated material; (5) by depriving the non-athletic individuals of incentive to physical exertions; (6) by depriving them of their efficacy as a means to health. He points out the fact that the harmonious development of the physique and the building-up and broadening-out of highest types of manhood and womanhood ought to offer inducements enough to work for.

As to how this may be best accomplished deserves special and constant study—not only for means but incentives. When obvious defects exist judicious, skilled direction is needed in such matters. At Amherst systematic class work obtains good results. In Princeton this was done in my day by compulsory drill work with Indian clubs, etc. Military drill has immense value. In the German Turngemeinde, all over this land as well as the Fatherland, classes from the youngest to the oldest drill in calisthenics regularly, and these are supplemented by out-door work—long walks in vacation times and to a moderate degree field sports. The best results come from systematic measures.

For those who need remedial training by movements the system of Ling is beyond all praise. A host of followers have taken up his suggestions and variously elaborated them, and claimed originality for their view, more or less falsely indeed, but all acting upon his clearly defined principles. The Delsarte system of expression promises to be a useful corollary to physical training.

One conclusion stands out clear and distinct from all this inquiry. It may be accepted as almost an axiom that no instance of organic lesion is yet demonstrated to be the direct and sole result of bodily exercises or competitions in one adequately trained.

The Work and Pay of Health Officers.*

BY HENRY B. BAKER, M.D.,
Secretary of the Michigan State Board of Health.

BY presenting the title of this address, "The Work and Pay of Health Officers," I desire, at this time, to deal especially with the subject of pay. My belief is that the compensation of the health officers, generally throughout the State, with only a few exceptions, is ridiculously small and inadequate; and that the best interests of all concerned are injured thereby, and will be best conserved by such a general change as shall recognize the fact, as old as the scriptures, that "the laborer is worthy of his hire" or reward.† I suppose it is not necessary for me to laboriously prove that this proposed change would be a good thing for the medical profession in this State; if it is ever questioned I will try to prove it, on some other occasion; but it may not, at first glance, be so apparent that it would be a good thing for the sanitary interests of the whole people of the State. Therefore the reasons for a belief that such is the fact may well be stated.

At first thought, it might seem that gratuitous services by physicians acting as health officers would always be for the best interests of the people generally; and, in the beginning of any movement for sanitary reform, it undoubtedly is for the best interests of the people. The people of Michigan owe a great debt of gratitude to the philanthropic physicians throughout this State who have generously performed services for the public which the people generally were not sufficiently informed to ask for, to pay for, or to appreciate, but which have tended to place Michigan in the front rank of progress in sanitary reform. The officers and members of this State Medical Society, especially, have contributed very greatly to place Michigan in the lead in sanitary progress.

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* From *The Journal of the American Medical Association.*

† 1 Timothy, v. 18, and Luke x. 7.

But, in the evolution of organized society, there come times when methods, which have served exceedingly useful purposes, need to undergo slight modification in order better to fit them for the changed conditions. In my opinion, the time has arrived when it will best serve the people of Michigan to gradually educate them into a knowledge of the real value of public-health work, and an appreciation of the fact that it is best for corporations and governments, townships, cities and villages, as it has long been known to be best for individuals, not to try to get something for nothing. In the long run, an effort to get something for nothing is unsuccessful. Such efforts generally lead the individual to the penitentiary, and the government to a penitential mood.

The people have gradually so increased in appreciation of the importance of public-health work that their representatives, the law-makers, have provided so much work to be done by health officers, and have affixed to the non-performance of the duties such penalties that no ordinary practitioner can without adequate compensation afford to take the chances of being held accountable under the law for the neglect of official duty. But the main reason why it does not now seem to be best that the duties of the health officer should generally be performed gratuitously, is that no ordinary practitioner can afford to, and it is getting so that generally no competent physician will, for any small sum, neglect his practice and do all that the law and public sentiment now expect to be done by the health officer.

The amount of service that is now required of the health officer is frequently not appreciated by the physician until he has accepted the office, when he finds that, owing to comparatively recent laws, more is required of him than he anticipated.

What is needed is some method whereby not only physicians, but the people generally, who have to pay the health officer, shall become informed of the nature, extent and importance of the work of the health officer. It seems to me that, as might have been expected from the occupation, those who have managed the school interests in Michigan have shown most wisdom in their methods of impressing the people with the importance of their work, and also in obtaining from the people the necessary money to carry on the school work. We need to adopt their methods. Whoever will examine his receipt for taxes will find that the main items are for school purposes. Yet the people vote to assess themselves for those purposes, after the subject has been carefully put before them. And those who have the interests of the schools in charge have opportunity, and they carefully prepare and put before the people every year, at the school meeting in September, the amounts of money which it is estimated should be used for school purposes, and facts and reasons why those amounts are needed. There should be a law similar to the school law, relative to public-health affairs. Surely the interests of the health and life of the whole people, including the children, are of more consequence than the school education of the children alone!

All that is required to make this apparent, is such an opportunity as the school laws provide for placing the facts before the people at the time the vote is taken to adopt the estimates of those who have this branch of the public service in charge.

How to Get Money for Public Health Work.—Have a public meeting of citizens of the city, village or township, at which meeting the amount of money to be assessed and collected for public-health purposes shall be voted upon. Have the local board of health present to that meeting estimates of the amounts proper to be collected. The health officer should be prepared, and should present to this public meeting the facts and reasons why expenditures for public-health work are in the public interests. It ought not to be difficult to convince the people generally that the lives and health of the people themselves are of more consequence than any other subject for which they collect taxes.

Let us suppose that opportunity is given the health officer to put before the people of a township, village or city the facts and reasons for public-health work; what can be presented?

This can be presented:

(1) The health officer can assure the people that, if they are situated in the average locality in Michigan, the death-rate will average about 17 per 1,000 inhabitants per year; that, of those deaths, about 11.18 per cent. will be from consumption, 6.5 from diphtheria, 2.7 from scarlet fever, and 3.2 from typhoid fever. He can assure the people that these are all communicable diseases, that they are all preventable through measures which are now well known to sanitarians; and, what is more to the point, he can assure them that reliable statistics, collected by the Michigan State Board of Health, from the experience of local officers in Michigan, have proved that (even after the disease has been introduced) about 75 or 80 per cent. of the cases and deaths from diphtheria and from scarlet fever are prevented by measures which a good health officer, acting in accordance with our present laws, and supported by the people of his locality, can inaugurate and maintain. Knowing approximately the population of the township, village or city, the health officer can readily compute the saving of life which such a saving, as has been proved to occur under such measures, would be for that number of inhabitants. Let us suppose a small city of 4,000 inhabitants—then the deaths from all causes, at the rate of 17 per 1,000 per year, would be 68; the deaths from consumption (11.8 per cent.) would be 8; the deaths from diphtheria (6.5 per cent.) would be about 4½ (4.4); the deaths from scarlet fever (2.7 per cent.) would be nearly two (1.8); the deaths from typhoid fever (3.2 per cent.) would be a little over two. If 75 per cent. of these deaths were to be prevented, there would be a saving of the lives of about three persons from death by diphtheria, about one from scarlet fever, and one from typhoid fever. These five persons constitute a part of the productive energy of the city upon which its prosperity depends. They are worth to the city, for what has been expended to raise them, and for what they will earn in excess of costs of maintenance, at least as much each as a good slave would sell for before the war, which was about the same as the statisticians

compute as the value of an ordinary laborer—say for the adult person $1,000, and for each of the children one-half of that amount. The four who are saved from diphtheria and scarlet fever would be likely to be children, while the one saved from typhoid fever would be likely to be in the prime of life. The actual money value of the five persons, therefore, would be $3,000. If a city of 4,000 inhabitants should vote to use $3,000 per year in public-health work, I have no doubt whatever but the five lives, above mentioned, could be saved, from those three diseases alone; and probably lives could be saved from other diseases. Then how much better to save those lives, and avoid the grief and sorrow which would result from their loss. Again, the money used would be only the amount which, without effort for restriction, would be lost to the city—the actual outlay would not be at all increased. It seems to me that any meeting of citizens, of ordinary intelligence, could be made to see that the lack of public health work is a wasteful extravagance, and that it is better to use a certain sum of money to pay a health officer than to permit the death of loved ones that have actually cost as much as that sum, and who, if they die, are a dead loss, in more than one sense.

The facts are applicable to every locality in Michigan, making allowance for a greater or less number of inhabitants.

Diet for Young Children.*

BY DR. AMMON.

CHILDREN, after the appearance of their first teeth, require as much care as during the first six months of life. The task of raising them becomes, indeed, even more difficult as they begin to show a greater independence.

At the beginning of the second year a little meat easy of digestion may be given; when the molars have cut through, some vegetable nourishment can be added. The food must be prepared in a manner appropriate to the digestive organs of the child, that is, in the form of soups. During that period there is no need of a great variety; on the contrary, experience shows that a certain uniformity is best. Other kinds of food should only be added by degrees, and milk should never be discontinued.

Potatoes, cakes, etc., are to be absolutely forbidden until the end of the second year, as well as complicated dishes, or those containing substances that are likely to ferment. For that purpose it is best not to allow young children at table with grown people. Their appetite is soon awakened and their stomachs spoiled by the taste they acquire for objectionable foods. A child at the beginning of or toward the middle of his second year should not receive more than from six to eight ounces of food, that is about the capacity of a soup plate.

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* Translated from *Revue d'Hygiene Therapeutique.*

A careful mother will soon be able to recognize when this quantity becomes insufficient; she will always know how to find the just measure, and thus the child will remain healthy and develop better than if he had been early indulged in a larger quantity of food. Too much indulgence distends the digestive canal and provokes gastric derangements, besides causing habits liable in later years to become injurious to moral as well as to physical health.

Toward the end of the second year all the milk teeth have been cut through and the digestive functions have greatly increased in power. The lower maxilla becomes stronger, the muscles of mastication more powerful, the cavity of the mouth larger, the lips more fleshy, the œsophagus wider; the salivary glands are better developed and secrete a larger quantity of saliva; the shape of the stomach changes and its walls grow thicker, the intestinal canal longer and more capacious; in short, all digestive organs are more adapted to an animal diet. At this period milk alone could not satisfy the child. It may be dispensed morning and evening, but during the day more substantial food is of absolute necessity. Light puddings and soups may be given, with the addition of soft-boiled eggs, white meats boiled or roasted, such as pigeon, chicken, veal, lamb, game. Certain vegetables, carrots, spinach, new beans, cauliflowers, may be used to vary the child's diet, provided they are well cooked.

The mother should always try to satisfy the instinctive preference of the child. Almost every child in good health likes sweet food, and it would be wrong to deprive him totally of sugar. The latter does not destroy the teeth, as it is erroneously believed; it rather contributes to the formation and solidifying of the dental substance. Transformed in the intestines into lactic acid and then into butyric acid, sugar aids in the formation of fat. From this it should not be inferred that pure sugar in large quantity ought to be given, for then it will provoke heartburn with its unpleasant consequences.

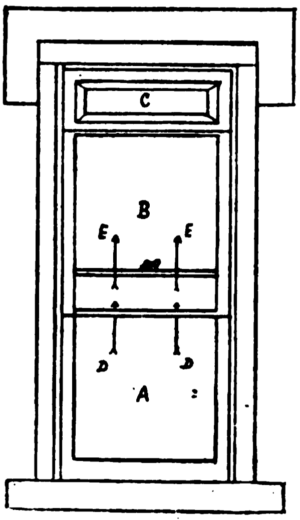
The use of pure sugar causes a perversion of taste, and may become the source of gastric troubles. It is especially prejudicial in the shape of pastry and cakes, in which sugar is mixed with almonds and ethereal oils or spices and indigestible substances. A moderate quantity of sugar added to a small quantity of salt constitutes the best seasoning for young children's food. Many children manifest dislike to vegetables the leaves or roots of which are eaten; if so, they should not be compelled to eat them. It is better to give instead gruel, rice, sago. Potatoes must be given them in small quantity and not every day, and always mashed or in soups. All vegetables are to be cooked with salt and butter, for this renders them more nutritious and assimilable. Fresh butter is a very important constituent in the diet, as it facilitates the digestion of food containing albumen or amylaceous matter. Stewed fruit in small quantity is not bad. The flesh of non-oily fish can be given at times, but the bones must be previously picked out. All these articles are to be given moderately warm; if cold they are digested with difficulty; if too warm they injure the teeth and irritate the digestive tract. The temperature of milk fresh from the cow is that which best suits children.

A New Ventilating Appliance.*

BY A. M. ROSEBRUGH, M.D.,
Late Surgeon to the Toronto Eye and Ear Infirmary.

EVERY physician's attention is called to a new appliance for window ventilation. The object is twofold: Firstly, to afford diffusion of fresh air without perceptible draughts; and, secondly, to make the ventilating appliances in a form that will add to, rather than detract from, the appearance of the windows and the building, and thus to make them self-recommendatory.

The ventilating appliance consists of a short supplemental sash—preferably ornamental—placed at the upper part of and outside of the window, and close against the top part of the upper sash. This supplemental sash, placed in this position, affords simple means for changing a direct draught into an indirect draught when the top sash is lowered for ventilating purposes. The extra sash forms a block to the passage of a direct draught over the top of the upper window sash, while a syphon-like space is afforded for the passage of an indirect draught by the overlapping of the upper and lower sash. It is not new to ventilate buildings by utilizing the space caused by the overlapping of the two window sashes, but heretofore this was done by the cumbrous method of placing a piece of planking below the lower sash. The cumbersomeness of this method has prevented its general adoption. By placing the ventilating appliances at the top instead of at the bottom of the windows, by making them a fixture requiring no attention and by substituting ornamental sashes for unsightly loose pieces of planking, the new ventilating appliances become self-recommendatory. They render window ventilation simple and easy, and I see no reason why they should not make it popular as well. By admitting the fresh air between the overlapping sashes, three important points are gained, viz.: Firstly, by treating several or all the windows in this manner, the number of inlets and outlets prevent the concentration of the draught at any one point in the room, the fresh air is diffused and perceptible draughts are avoided. Secondly, the inlets are at the right height to prevent unpleasant draughts on the person. W. P. Buchan, in his late work on ventilation, states that five feet six inches from the floor is the very best point for the admission of fresh air into a living room or a sleeping chamber. Thirdly, by admitting the fresh air through the syphon-like space between the



OUTSIDE VIEW OF WINDOW VENTILATOR.

A, lower inside sash; *B*, upper outside sash; *C*, supplemental sash; *D E*, *D E*, arrows, representing ventilating space between sash *A* and sash *B*.

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* From *The Canadian Practitioner*.

overlapping sashes the fresh air is directed upward towards the ceiling. This can be very easily verified by a simple experiment; as, for instance, by using lycopodium seeds or the phosphorous acid given off at the first striking of a match before heat is evolved from the burning of the sulphur.

With a view of testing the efficiency of the ventilation, the following tests were made at my consulting rooms, where I have four windows equipped with the ventilating appliances, viz., two windows facing the west and two windows facing the east, and the two rooms *en suite*. On December 2, with the air meter, I found the air entering between the overlapping sashes at the rate of 240 feet a minute, and on December 12 at the rate of 440 feet a minute. On both occasions the wind was from the west. This gave 3,000 sq. feet per hour on the 2d, and about 5,500 sq. feet on the 12th, as the two windows on the west gave a total ventilating space of thirty inches.

Where windows on opposite sides of a room or building are equipped with these ventilating appliances, both an inlet for fresh air and an outlet for foul air is afforded—"cross ventilation"—the direction of the current varying with the direction of the wind. This method of admitting fresh air may be combined with any of the usual systems of removing foul air, such as by the use of fans, by cowls or by artificially heated flues.

This system of ventilation, it seems to me, is particularly well adapted to bedrooms and sick chambers, where it is desirable to have a constant supply of fresh air with freedom from unpleasant or dangerous draughts. It may also be made to supplement any other system of ventilation.

I have suggested to some parties the propriety of taking up the manufacture and putting in of these appliances as a business, but so far without success. If the co-operation of the medical profession could be assured, there would be no difficulty. Would it be too much to bespeak such co-operation?

With regard to the question of cost, I find that plain ventilators, suitable for bedrooms and rear premises, can be put up for about fifty cents each, while ornamental sashes would cost from $1.25 up, according to width of window and according to the style of the ornamental glass.

Railway Hygiene.*

BY G. P. CONN, M.D.,

Vice-President of the National Association of Railway Surgeons.

DURING the consideration of the mutual relations of costs and compensations to the management and employee, let us not forget the patrons of the road. They are the people whose connections with the railroads of this country make dividends possible, as well as the construction of new roads a necessity, and who with a patience born of long suffering, continue to ride over our lines at considerable loss to themselves, although without much compensation in the way of comfort or healthful surroundings. They certainly deserve some consideration from an association like ours. Very few coaches have anything like an adequate system of ventilation for a full complement of passengers, neither are the employees usually instructed in the management of such as exist. Our train service has not advanced so rapidly as the other departments. Elegant and expensive coaches are the rule, and we boast of our fast trains, but with steam heat the brakeman or other person in charge must be instructed to attend to other duties than simply calling the names of the stations and making the journey a pleasant pastime for the young lady passengers. Unskilled men would be of no service as car inspectors, neither are they serviceable in running trains, and as the car inspector must be trained for his work, so should the brakeman receive instruction regarding the heating and ventilation of his coaches. The complicated system of heating now in use involves the exercising of a greater degree of intelligence and judgment on the part of the brakeman than was formerly called for.

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* Abstract of a paper read before the recent meeting at Old Point Comfort, Va.

The ordinary coach has a capacity of about 4,000 cubic feet of air space, and a seating capacity for sixty passengers. With all the seats occupied and no fresh supply, the air will become exhausted in a single minute, and then becomes contaminated and unfit to breathe unless renewed. Fortunately coaches are not constructed so that it is possible to have them hermetically sealed. In view of these facts can a car be so constructed as to secure the renewal of the atmosphere therein as rapidly and as constantly as the demand requires? Improvements are being made from year to year, yet all sensible people agree that the desired result has been but imperfectly secured as yet. In justice to our master mechanics who construct our cars, it should be said that until brakemen are instructed in our present system of heating and ventilating the result will always be unsatisfactory.

Will this extra work pay? Will the compensation cover the cost? It is generally conceded in the East that a dining car does not directly pay the expenses incident to the cost of the service, yet it is well understood that indirectly it pays a large dividend in advertising the line over which it passes; therefore the cost and compensation are equalized, and while clean cars and well-ventilated coaches require a considerable outlay of money, yet to a through line the advertising thus secured will return a good dividend on the amount invested and afford the management as large a compensation as would a liberal supply of printer's ink invested in describing the picturesque, the beautiful, and the other natural advantages of their line. On the other hand, suppose the printer's ink be used in showing up, on a through line, the unsanitary condition of the cars, the poor ventilation, the filthy condition of water-closets, the fact that the car windows are so covered with dust and dirt that the curtains are unnecessary, that trainmen are noisy, uncivil, etc., how long would it be, in this enlightened age, before the tide of travel would set toward the rival line offering better hygienic accommodations? Corporations, like individuals, do not work altogether for glory, but for the money there is in it, therefore every faculty of the management is brought to bear in the endeavor to secure for their respective lines such business facilities as will allow them to earn operating expenses and a dividend. To do this in passenger work will soon require that hygiene and sanitation shall be considered in the construction of cars as well as in looking after their care while in the service, for the public are becoming critical on these matters.

That those connected with the train service should be required to do this work is not questioned; but until such employees are properly educated in the work and have some knowledge of the elementary principles of hygiene and sanitation, it will be useless to expect anything like a system in car cleaning and train service that will prove satisfactory. This assertion need not frighten any one, for the first principles of hygiene and sanitation are in no wise complex, neither do they present a problem that cannot be solved by a little forethought and a comprehensive and common-sense view of the situation.

To say that a coach or a house should be kept clean in every part and place is a very common-place observation, and still it involves one of the first principles in sanitation, as well as in surgery and in medicine. It ought not to be a very severe task to instil into the mind of the car cleaner this principle nor to make the average brakeman understand that he will be held responsible that his car is clean and for the best use of such devices for heating and ventilation as may be found about the train; yet their attention must be called to such facts, and there must be some one who will call them to account whenever untidy and unwholesome conditions are to be found.

This is an important department, and there should be at its head an expert in such matters, the same as has been found necessary in freight, passenger and operating bureaus. To do this and not excite friction among employees is a matter requiring tact, as well as a thorough knowledge of the requirements of the service. This last fact is an important one on lines running coaches many hundred miles and through considerable variation of climate, as the longer a continuous run is made, the more care is necessary to prevent the coach from becoming unwholesome and unhealthful. Unfortunately train crews are often shifted even when the whole train has long distance journeys, as any untidy conditions are usually shifted from one division to another, and still, men should not be required to work continuously more than a reasonable number of hours. Therefore, it would seem all the more necessary for the managements of all through lines to adopt some common mode of enforcing good hygienic regulations.

Every member of this association has more or less knowledge of the sanitary condition of the cars, depots and grounds of the section of road he has occasion to pass over, and without special trouble to himself might become more intimate with the existing conditions, and through him the surgeon-in-chief or the general manager can obtain by a system of reports a knowledge of the hygiene of the road, as well as what may be necessary to reform any special neglect. In this way an intimate knowledge of the hygiene of the road is to be obtained at comparatively small expense, and the same machinery, working from a central office, can be made to accomplish a great deal towards satisfying the public when comfort of travelling is under consideration.

It is true this work may not be so eminently satisfactory to the surgeon as the saving of life by reason of some brilliant surgical operation. However, the patron of the road who is enabled to make a journey across the continent without suffering the discomforts arising from the lack of an intelligent care of the heating and ventilating of coaches, and who can arrive at his destination in a good, sound, healthy, vigorous condition, ready for business so soon as the train comes to a full stop, will never forget that line nor fail to draw congratulatory conclusions regarding the management, whose intelligent care has been the means of rendering such results possible. It may be considered an aphorism that the patron of the road, as well as the employee, does not intend to have any use for a surgeon. It is only when misfortune overtakes the people that they are glad to make our professional acquaintance, and having occasion to call our attention to their condition, they do not feel especially in a mood to congratulate the management on the fact that they have been injured while in their service. Our duty to such as have been injured is plain and well understood by every member of this association.

Modern surgery demands that every known precaution shall be taken to prevent septic infection, and as railway injuries are generally of such a nature as to render it probable that something of an infected character may have been in contact with the wound, we are in duty bound to destroy, as far as possible, such septic influence by freely using well known antiseptic remedies. This being our duty to those who have been so unfortunate as to be injured, are we not under some obligation to others who are more fortunate and escape injury by accident?

Have they not a claim upon us as an association educated in these matters and therefore competent to give advice and instruction in all that relates to hygiene and sanitation? More than this, are we not under a moral obligation to the management that employs and pays us for looking after the interests of its line? Shall we not endeavor to secure such hygienic conditions along the line and in its coaches that the road will not lose caste and patronage by reason of sanitary neglect that a little effort on our part might easily prevent?

The cost of such supervision would be trifling, while the resulting increase of patronage, good-will and hearty commendation of the public would be a compensation that can scarcely be estimated.

By an associate effort, rules and regulations looking to the comfort of passengers, as well as regulating the transportation of invalids, might be effected. These rules and regulations, being the same in all parts of the country and issued by every road, would not be esteemed as especially arbitrary, as such orders might be if promulgated by a single management.

I suppose no one will for a moment question the right of the public to demand that those ill with contagious and infectious diseases shall be excluded from the coach occupied by those who are free from such diseases, and that a car which has been used to transport one or more cases of such diseases shall be properly renovated, cleansed and disinfected before it shall take its place again on the line and be occupied by an unsuspecting public. Who else can conduct such work, give directions regarding the manner in which it shall be done, and also determine when a coach can be safely occupied, as well and economically as those whose education has been in that direction?

Having such education, shall we withhold our advice because it does not directly and distinctly belong to the art of surgery? Shall we wait until the management calls our attention to the fact that a reform in the sanitation of its road has become necessary? Does the head of the passenger or freight department wait for the general manager to suggest how the service can be improved, or the business of the line materially increased? It is true our association is in its infancy; that but little concert of action has been developed, and in some sections of the country individual members have contributed but little time and effort to improve the efficiency of a surgical department. It is also true that before any great advancement can well be made, it must be fully demonstrated that the compensation will directly or indirectly cover the cost.

The whole matter may be summed up in a few words, viz.: Does the public good require any services of this nature? And we may rest assured that when public opinion becomes thoroughly aroused upon this or any other subject, whereby a change is demanded, something will come of it, as there always arises some ruling genius whose fertile brain has the power to suggest a means to the required end.

Some Practical Hints to Those Engaged in the Milk Trade.*

BY WM. W. KELSO,
Sanitary and Cleaning Inspector, Paisley.

IN the situation and construction, the milk-house demands and cannot receive too much consideration. A northern situation is perhaps, the best, and the floor, walls and shelving should be of impervious materials. It should be altogether separated from the dwelling house. The old mal-arrangement of having it in direct communication with the house is now condemned, and rightly too. It should be at some distance from the dungstead, and should have no connection or communication with the scullery or boiler-house, nor should any drain communicate with, or pass under it. The importance of separating the milk-house from the dwelling and sleeping apartments cannot be overestimated, for by this arrangement the contamination of milk by infection is reduced to a minimum. Epidemics of disease have frequently occurred, owing to the milk-house being in direct communication with the dwelling house, which would probably never have occurred but for this, and will certainly be less frequently heard of under the newer and safer arrangement.

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* Abstract of a paper in the *Glasgow* (Scotland) *Sanitary Journal.*

A boiler-house with boiler for boiling the feeding stuffs in; a good scullery, with a boiler for boiling water for scalding the milk-vessels in; and a washing-house for domestic purposes, are among the necessary outhouses of every well-appointed dairy-farm.

The domestic washing-house should be at some point removed and disconnected from the milk-house, byre, and other outhouses, and on no account should clothing be washed in the scullery. So long as the premises are clear of infection, there might be little to fear from the non-observance of this rule. But, as has been shown, communicable disease may exist without being recognized, and under such circumstances the danger attending the washing of milk-vessels and clothing in the same place will be apparent, as will also the necessity for having a separate washing-house for domestic purposes.

The dungstead is perhaps one of the most neglected and badly-constructed accessories to be found about the average dairy-farm. In a great number of cases a large hole in the ground does service; and this owing to long usage, having become saturated, the liquid matter then commences to overflow and lie stagnant on the ground for some distance round. Here again the question of economy arises. Under such conditions, and when close to the milk-house or well, should the water be drawn from such a source, there would be little wonder if the milk supply became connected with an outbreak of disease, and at any rate it would always be looked upon with a suspicious eye. All dungsteads should be built and bottomed with stone or concrete, and in order that common decency may be observed, there should be two closets or privies, one for the use of each sex.

All persons, in milking, should wash their hands thoroughly before commencing, and between the milking of each cow. By doing so, whatever the person might have been engaged at before milking, the danger of anything from their hands contaminating the milk or being carried from cow to cow would be removed.

On any person about a dairy or dairy-farm showing signs of sickness, no matter how slight, they should at once and for a time be kept apart, and prohited from helping in any way, either at the milking or distribution of milk. And this precaution should be observed until a doctor has been got who can say beyond any question of doubt whether such a person can be allowed to go about the place or to resume work without danger.

We have already seen how a person may be going about and apparently very little wrong with them, and yet be affected with a communicable disease, and capable of throwing off infection. Particularly is this true of scarlet fever and diphtheria, which may only assume the form of a sore throat. The expectorations of such a person are infective, and, should they fall where the cows lie down, then the chance of infection finding its way into the milk-can is not so very remote. As a precaution against this, the udder and teats of each cow should be carefully washed before the operation of milking is commenced. Regarding the animals themselves, even on the suspicion of disease or the appearance of vesicular eruption on the teats, the milk of such an animal should not be used. Better surely to lose the milk of one cow than to run the risk of injuring that of all the others.

It is generally admitted that cleanliness and health go hand in hand, and while this is true in a general sense, there is probably no trade or business to which the motto of "cleanliness in all things" should apply with more force or suitability than to that of the dairyman or dairy farmer. That a little extra trouble in the way of cleanliness would give a good return financially and otherwise cannot be denied. If, for instance, a milk purchaser finds that owing to their own can or jug not having been properly washed or scalded before getting milk put into it, the milk quickly becomes "turned" or "sour," then, following the same line of reasoning, the conclusion will likely be arrived at, that if the milk sold by one dairyman keeps longer than that of another, it is because there has been greater cleanliness observed in the one case than in the other. Has this matter of the aspect not a business significance to the dairyman?

In conclusion, allow me to say that it may often appear that too much is said and done in a spirit of hostility or fault-finding regarding the trade you are engaged in. But it must not be forgotten how largely milk bulks in the daily food supply of the people, and therefore it is only reasonable to expect that they will exercise every means in their power to make sure that the source of supply is not only safe, but above suspicion; and as the path of common sense is usually the path of success in business, it is to the traders' interest to see that it is so. The complex nature of our social system makes it impossible for us to exist and have our daily wants supplied independent of one another. This is the reason why interest and attention is often taken by the public in matters with which, at first sight, it may appear they have no business, and which is often mistaken and felt as irksome and uncalled for interference. Were it otherwise, this feeling might, nay, in all probability would, soon give way to another savoring strongly of being left severely alone.

Public Health a Public Duty.*

BY REV. A. E. COOK.

Pastor Iron Mountain (Michigan) Baptist Church.

HEALTH is the state or condition of soundness, wholeness and purity. Physical health is the condition of physical soundness, or freedom from physical pain or distress.

Public health is conceived to be that condition or state of the inhabitants of any given community in which the largest possible number are in the enjoyment of physical soundness.

The proposition set forth in our subject is briefly this: that to reach and maintain a condition of public health, as already defined, is the *duty*—not the privilege alone, but the bounden duty of the public.

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* Read before the Sanitary Convention at Iron Mountain, Mich.

The proposition is proved by the following considerations:

1. The public, and the public only, has power to perform certain things which are indispensable to the highest conditions of public health.

Admitting for the moment that "the public" embraces the whole state, we find that our legislators have expressed their recognition of this principle by the passage of laws regulating the sale of powerful drugs whose wise use is undoubtedly beneficial, but whose indiscriminate and unregulated use would be as undoubtedly deleterious. In the passage of laws for the drainage and reclamation of swamp lands, which, permitted to remain in their natural state, give rise to malarial affections through pollution of the atmosphere we breathe; by the passage of laws prohibiting the sale of kerosene oil for illuminating purposes which does not come up to the certain standard of purity named in the statute; and by the passage of many other laws which might be cited. It is self-evident that such things as these could not be accomplished by individuals nor by isolated small communities, and that the results aimed at can only be attained by the State at large acting through its accredited authorities.

Limiting "the public" to the city or village, we find the same conditions confronting us.

The construction of a system of sewerage, an adequate supply of pure water for culinary and cleansing purposes; the proper disposal of the waste and excreta which, allowed to accumulate, burden the water in our wells and the air we breathe with the germs of death-dealing disorders; the fixing of limits within which highly combustible buildings shall not be erected; the proper provision for escape from public buildings in case of fire; and the sufficient isolation of electric wires, are some of the things manifestly beyond the reach or the willingness of the individual and as manifestly conducive to public health.

2. Public health is a public duty because it is a public benefit.

Each adult engaged in any productive industry has a pecuniary value to the community. The loss of such persons through the agency of preventable disease is a loss not only to the immediate relatives, but also to the public. The city or village, like its individual citizens, is helped or hindered by the reputation it bears; and it is well known that a reputation for unhealthfulness lodged against a city is a most serious incubus upon its growth.

Again the public is benefited by the highest conditions of health through the laws of natural heredity. "Like father like son," applies in a very perceptible degree to our physical status, and it is an indisputable fact that the good health of the present generation means the better health of the next.

3. Public health is a public duty because the public alone has the power to compel.

It has been said that every sin against righteousness and God has for its root and centre some form of human selfishness. Whether that be true or not in every particular, it is undeniable that many of the sins against public health have for their starting point the selfish cupidity or avarice of individuals. There is a large class of people even in this day of enlightenment who are unacquainted with the fundamental sanitary laws. These should be patiently instructed and helped into a higher knowledge and a better mode of life. But there is another class found in greater or lesser numbers in every community with sufficient knowledge to be of material assistance to their neighbors and the general public, but who can be rooted out of their complacent selfishness and transformed into complaisant citizens by nothing short of the strong arm of the law.

4. Public health is a conservator of public morals and therefore a public duty.

We do not think the oft quoted adage "Cleanliness is next to godliness" can be found in just that form in the Bible, but we have no doubt of the godliness of the truth it expresses.

Extreme poverty, even in this land of plenty, is, no doubt, sometimes unavoidable and therefore excusable; but when squalor, filth and dirt are permitted to reign supreme upon the person and about the home, it is too evident that self-respect, which is the basis of all right character, has taken its flight.

These are among the considerations which induce belief in the truth of the proposition that "Public Health *is* a Public Duty."

What Does the Well Drain?

BY H. E. BEEBE, M.D.,
Sidney, Ohio.

LIKE all other questions, this is easier asked than answered. It is a practical subject, one that interests us all, and one about which we are too careless. Long since, engineers formulated the proposition that a well or hole in the ground will drain the soil for a distance of a circle the diameter of which will equal twice the depth of the excavation.

This proposition never has been proven and seldom contradicted. It has been merely taken for granted and considered as a corollary from the unproved proposition. Now, while it may be a fair approximate rule to follow with all due precautions, it is too often the precautions are not considered, and it is not true. All depends upon the kind of soil and its environs.

With the average well how little is known of the subsoil, its base and the different strata beneath. There are some soils where it has been conclusively proven that the average hole in the ground would not drain the ground two feet away; again, another gravelly porous soil is drained many rods distant and the well drain a distance many times its depth. Channels have formed about old wells that drain sinks, privy-vaults and cess-pools almost an unreasonable distance, to say nothing about the subterranean streams that may drain these filth receptacles, and thence into the well.

The farmer, in draining his land, proves that the tiling he places many rods apart drains comparatively well all the soil between, and it is placed but from one to three feet beneath the surface. According to the fallacious principle, it would only drain that distance away.

Old wells should be carefully watched and cared for. See that they are snugly covered and ventilated. Watch not only the surface drainage, near and remote, but study the subsoil and subterranean formations so far as possible and practicable.

Poisonous gases are not destroyed, nor do they lose their vitality by filtering through the different strata of soil. Neither does the æration of water kill germs. The clearest, most sparkling water is often by far the most poisonous. Sanitary inspection is frequently able to detect these dangers, but when it fails to do so, chemical analysis will usually succeed. Knowing these things, how very important it is that we examine the well whenever there is the least suspicion of danger.

The laity, and I am sorry to say, the doctors, do not sufficiently consider the question, and it is the sanitarian that must investigate, teach and guard them in times of danger.

There is no rule that can guide us in this matter, excepting through rigid sanitary precautions. Do not forget that the well may drain a circumference much beyond its depth.

Many fallacies that at one time stood as facts, and as such were honestly advocated by the masses, are to-day fast disappearing. This is one of them.

Food Before Sleep.

BY DR. W. T. CATHELL,
Of Baltimore, Md.

SOME persons, though not actually sick, keep below par in strength and general tone, and I am of the opinion that fasting during the long interval between supper and breakfast, and especially the complete emptiness of the stomach during sleep, adds greatly to the amount of emaciation, sleeplessness and general weakness we so often meet.

Physiology teaches that in the body there is a perpetual disintegration of tissue, sleeping or waking; it is, therefore, logical to believe that the supply of nourishment should be somewhat continuous, especially in those who are below par, if we would counteract their emaciation and lowered degree of vitality: and as bodily exercise is suspended during sleep, with wear and tear correspondingly diminished, while digestion, assimilation and nutritive activity continue as usual, the food furnished during this period adds more than is destroyed, and increased weight and improved general vigor is the result.

All beings, except man, are governed by natural instinct, and every being with a stomach, except man, eats before sleep; and even the human infant, guided by the same instinct, sucks frequently day and night, and if its stomach is empty for any prolonged period it cries long and loud.

Digestion requires no interval of rest, and if the amount of food during the twenty-four hours is, in quantity and quality, not beyond the physiological limit, it makes no hurtful difference to the stomach how few or how short are the intervals between eating; but it does make a vast difference in the weak and emaciated one's welfare to have a modicum of food in the stomach during the time of sleep, that, instead of being consumed by bodily action, it may during the interval improve the lowered system. I am fully satisfied that were the weakly, the emaciated and sleepless to nightly take a light lunch or meal of simple, nutritious food before going to bed for a prolonged period, nine in ten of them would thereby be lifted into a better standard of health.

In my specialty (nose and throat) I encounter cases that, in addition to local and constitutional treatment, need an increase of nutritious food; and I find that by directing a bowl of bread and milk, or a mug of beer and a few biscuits, or a saucer of oatmeal and cream before going to bed, for a few months, a surprising increase in weight, strength and general tone results. On the contrary, persons who are to stout or plethoric should follow an opposite course.

Position in Sleep.*

BY J. C. MINOR, M.D.,
Of Hot Springs, Ark.

NECESSITY for uninterrupted and refreshing sleep is unquestionable. Sleep that is interrupted by whatsoever cause, loses its refreshing power, and the person awakens to duty a loser. It is unnecessary to repeat here the number of hours of sleep required for the different periods of life, but attention will be called to one point frequently overlooked by physicians when directing patients and others concerning their rest. This is *position in sleep*. When sleeping, it is necessary for *breathing*, *circulation* and often *digestion* to go on untrammelled—otherwise sleep is disturbed.

The proper position for securing the easiest discharge of all three of these important functions is probably as follows:

Lie on the right side (unless some physical ailment prohibits) *with head slightly drawn down on the pillow, which should be five or six inches high. Flex the limbs slightly, allow no joint to rest upon another. Close the lips and breathe through the nostrils, not the mouth,* unless nasal stenosis is present (in which event have removed the hypertrophied tissue). Have lights extinguished or removed to an adjacent room with connecting door open; if an hypnotic has been taken all talking and bustle in the room should cease, in fact everything conducive to sleep should be observed. . . . .

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* From *The Hot Springs Medical Journal.*

If free *respiration* alone were the desideratum, the lying on the back would allow more freedom of action to the muscles of respiration than any other position, but *circulation* and *digestion* have claims to be considered. So the lying on the right side, with the head slightly drawn down on a pillow five or six inches high, will give freer action to the external intercostal and the crico-arytenoid muscles, and this position throws the stomach and liver downward and slightly forward, relieving the diaphragm of pressure. The arms should not be folded on the chest nor on the abdomen; for in woman the chest needs greater freedom from weight than does the lower half of the trunk. This is possibly a provision of value to the *enciente* woman. The reverse holds for a man, as he can tolerate for a short time only a weight on the lower part of the trunk. So the upper extremities will rest most comfortably placing the right by the side of the body, with the left lying on the thigh.

The circulation.—The heart is beautifully poised in the thorax, swinging as it does in neither a vertical nor horizontal position when one is erect, but on assuming the recumbent posture on the right side it rests as it were in a hammock, lying almost horizontally, its action becoming less labored, its beats less frequent, its movements comparatively free from friction.

The right lung is probably divided into three lobes, so that in the recumbent position and to the right side the heart may press on the inner surface of the middle lobe without interfering with the action of the lower and upper lobes. In this proper position in sleep the liver and the loaded stomach are not harmfully contiguous to the structures between them and the heart.

Flexing to a slight degree the extremities insures an unobstructed flow of arterial blood. Allowing no joint to rest heavily on another insures an unobstructed return of venous blood and also obviates injury (by pressure) to the nerves. Nerves thus become obtunded and the sleeper is aroused with "cramping" muscles or with his leg or forearm "asleep."

The digestion.—Lying on the right side accomplishes rapid evacuation of the stomach and small intestines of their contents, from the fact, of course, that the pyloric orifice hangs downward and to the right, allowing unobstructed passage of food, as fast as digested, into the small intestines, where during quiet sleep, absorption may take place and the residue pass through the cœcal valve and on to the descending colon.

BUXOM WIDOW (at evening party): "Do you understand the language of flowers, Dr. Crusty?"

Dr. Crusty (an old bachelor): "No, ma'am."

Buxom Widow: "You don't know if yellow means jealousy?"

Dr. Crusty: "No, ma'am. Yellow means biliousness."

THE odor of flowers is controlled, as has lately been shown, by light and partly by air; excluding these agents, flowers cease to exhale their perfume.

The School Girl's Lunch Basket.*

BY MRS. E. N. HOOD,
Principal Hood Seminary for Girls, Austin, Texas.

RECENTLY there was an article published in the *Texas Sanitarian* on the "Hygiene of Schools," which was read by Prof. Enos, of Charlevoix, Mich., before the Sanitary Convention, held in that city in August, 1891. To this were added other suggestions relative to school children's clothing, the care of their eyes, etc., by Professors Kellogg, Vaughn and Howell.

There is yet another point of health to which the attention of parents should be called, and that is the preparation of the lunch basket, upon which the little ones are to depend for their noonday meal. Every one who lives in a home whence the children go to school daily will bear witness to the fact that very few of them eat a solid morning meal. What with the vexed servant question and the consequent late breakfast, the hurry to gather books and wraps, and to receive the points of the too frequent commissions with which mothers and older sisters tax them, the child does not give time nor attention to the eating of a proper breakfast, but snatching a bit of the most palatable and frequently least digestible portion of the morning meal, crams into the lunch basket what pleases her fancy, and rushes off to catch a car. Or oftener, perhaps, is told that there is no time to put up lunch, and is furnished with money and instructed to stop at the confectionery and buy something for lunch. This "something" will usually prove to be a paper of chocolate drops or rich nut candy, perhaps supplemented by a lemon or a cocoa-nut.

By the eleven o'clock recess the little stomach is faint for want of nourishment, and is then stayed by those cloying sweets; at noon, a headache and general debility has ensued and there is little appetite. A few hasty dips into the basket suffices and the child rushes to violent play. Soon health fails under this regimen, a physician is consulted and prescribes, and the announcement is made that the child is *studying* too hard or is too closely confined, and must discontinue school until she recuperates. Classes are lost, interest in her studies interrupted, habits of steady persistence in duty broken up and a series of bad effects instituted, the extent of which is commensurate only with the number of times these facts recur.

If any one believes the case exaggerated, he is invited to stop at some school during the noon hour and see the children open their baskets. I did this a few days since, and this is what I saw: Basket number one contained three lemons and a paper of confectioner's sugar (what part of terra-alba that article represented I leave the chemist to guess). Number two had chocolate cake, cocoa-nut cake, a dish of olives and pea-nuts. Number three, a box of sardines, a can-opener, four cucumber pickles and crackers. Number four, mince pie, chow-chow and pickled tongue. Number five, potted ham sandwich, candy and fruit. Now, few adults are endowed with stomachs able to bear such a diet for nine months in a year—alas! the slaughter of the innocents!

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* From *The Texas Sanitarian.*

If mothers could feel the importance of this matter, they would insist, in the first place, that the children should eat a good substantial breakfast before leaving home. This can be done if it is made a point, and they be required to rise early enough to be in readiness to start as soon as breakfast is over. In the meantime, let the mother herself put up the noon basket, even if something else must be left undone. Let there be fruit for the eleven o'clock recess, with the injunction that nothing else be touched. Then generous slices of good bread *thickly* spread with butter, cold meat and a bottle of rich milk, and perhaps a bit of sweets that the obedient daughter is told to eat *last*. Ask her, when she comes home, if she ate her lunch, and make it worth her while to obey, and, if I am not mistaken, you will have a happy, rosy-cheeked little girl, who will love her school and will not need physic to keep her from "breaking down" before the session is finished.

Ventilation of the Holds of Ships.

A very important question concerning the ventilation of holds in ships has been raised by a letter addressed to the Secretary of Lloyd's. This letter is written by Mr. J. Stanley Metcalf, Consulting Secretary to the North of England Protecting and Indemnity Association. Formerly the hatches were the only means of ventilation for the holds of ships, and these were only lifted off when the weather was fine and dry. Porous cargo had therefore no opportunity of absorbing moisture from the foggy or damp weather. But now, there are large cowl ventilators, utilized in all weathers, and which let down on to the cargo any amount of damp air This is readily absorbed, notably by such substances as jute. On the other hand, the ventilation is not sufficient to dry the cargoes. An experiment to illustrate this fact is suggested. If we place dry tobacco in a jar with a small hole in the lid and expose the jar to humid air, the tobacco will become quite damp, and then, even if removed into a dry, warm room, it will remain moist for a long time. Though the small hole, like a cowl on a ship, suffices to let the dampness in, it does not suffice to dry the tobacco. But if we remove the lid of the tobacco jar, or, in the other case, the hatchway of the ship, when the temperature is warm and dry, then the tobacco or the cargo will be in a position to be dried by the evaporation of the moisture. We need hardly point out how injurious to the cargoes and to the health of the persons on board, such dampness must be. Where there is a vegetable cargo, such as potatoes, onions, etc., the probabilities are that the damp will cause fermentation, and occasion not merely the destruction of the cargo, but a foulness of atmosphere, dangerous to health. This is so much the case that captains sometimes close all the cowl ventilators as soon as they are at sea and away from the control of the port sanitary authorities. Evidently the regulations as to the ventilation of the holds, where cargo alone is packed, require, in the face of these facts, careful revision.—*The Lancet.*

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EDITORIAL

Letters on Health.

MY last letter, if you remember, contained a promise to tell you how to so handle yourself that even though the germs of disease do gain access to your body they will not, therein, be able to produce disease. Let us first, briefly and roughly, look over the phenomena that occur in the production of disease, and you will be struck by the similarity that exists between the growth of vegetable life and the growth, I might say, of disease. Let us take corn, as a familiar example. If you drop a grain of corn on the floor of your room, there it will remain, for an indefinite time, a grain of corn and nothing more. Put this same grain into a barren sandy soil, and a weakly growth will ensue; plant it in rich, well-manured, well-prepared, well-cultivated soil and a most luxuriant growth is the sure result. From this one grain, hundreds of grains, each equal in size and potentiality to the original, have resulted. But, that we may have this result, two prime factors have been essential; first, the seed or grain and, secondly, a soil suitable for the active development of the dormant life within this seed.

Briefly speaking, that which I have described is very much like the process that takes place in the production of disease. As with the growth of corn, so with the production of disease, there must be two factors, a seed and a soil.

The germ of disease is as much a living, potential seed, as is the grain of corn, and equally does it require a suitable soil for its development and reproduction. Introduce a disease germ into a human body that is in a condition to foster it, and this one germ will propagate a progeny of such immense magnitude that the ear of corn sinks into utter insignificance in comparison thereto. This one germ multiplies and multiplies until millions of its kind are circulating throughout the body, and when this point has been reached the disease becomes manifest. You have, probably, heard your physician speak of "the period of incubation" of contagious disease, by which he designates the time that elapses between the entrance of the germ into the body and the manifestations of disease. During this period the process of multiplication is going on; the original germ (or number of germs) is organizing an army, which, when powerful enough will assault and do battle with the conservative forces of the economy; when this time comes we have the disease, that is, the working power of the germs made manifest.

Now, then, if this be the *modus operandi* of the production of acute (or chronic) contagious (or germ) diseases; it must be evident that the means of prevention are two-fold; first, the destruction of the germs or seeds and secondly, the acquisition of a condition of soil (or of body) that will not be favorable to this development. In my way of thinking, the second of these propositions offers the best protection against disease, because, I believe, that the germs of disease are so universally present; so minute; so marvellously rapid in their reproduction, that it would be, practically, useless for us to attempt their extermination. Of course, when we are conscious of their presence and propagation, as during the existence of an acute disease, then should we endeavor to destroy them, as I suggested in my last letter; but to secure their utter annihilation seems to me utterly beyond the pale of possibility. It seems to me that the atmosphere of a large city must be always very full of disease germs, which the inhabitants thereof must be continually taking into their systems. One of our very highest authorities has asserted that every time a consumptive expectorates he casts forth in this expectoration 300,000,000 bacilli, or seeds of consumption; while, as a practical man, I feel like accepting this statement *cum grano salis*, yet such scientific statements must make one feel that the atmosphere of a city must be very full of disease germs.

So then it would seem that the most rational protection for your body from disease would be found in so caring for your body that it will not present a soil suitable for the growth and propagation of the seed of disease that may be deposited therein. A typically, naturally, normal body will not furnish conditions suitable for this growth. In the economy of normal nature, so to speak, provision for disease does not exist. Had man always lived in accord with nature, disease would be unknown; therefore can we broadly say that a perfectly healthy body cannot be attacked by disease; without a little reflection this may seem like an hibernianism, but a moment's thought will make my meaning clear. To-day, for example, your body may be in good, perfect working order, and you might, therefore, with impunity, take into it all the disease germs in the world, they would be incapable of doing you any harm; to-morrow, through some conscious, or, possibly, unconscious, personal dereliction, you will be in a condition favorable for the development of the seed of some particular disease. Let us take cholera as a good example of this idea. It is impossible for a person with a healthy stomach to have cholera, because the juices of such a stomach will destroy the life of the seeds of the disease before they have passed on into the bowels to do their deadly work; so that, to-day, with a healthy stomach, you might drink freely of water full of cholera germs, with impunity. But now, suppose you go to-night to a dinner party, eat heartily of richly seasoned food and drink deeply of wines and liquors; in the morning you will awake fevered and thirsty; your stomach is inflamed; you drink freely of the same water that you safely imbibed yesterday, and in a few hours you are writhing in the agony of cholera. Your unhealthy stomach has been unable to successfully cope with the germs of disease. If then, a perfectly normal condition of body is an essential for immunity against disease, is it possible for any one in these days of degeneracy, to enjoy this immunity? In answer, I would say that while a typically healthy body is the typically unsuitable soil for the growth of disease germs, and that while there are comparatively few such typically healthy organisms, yet that the nearer we approach this ideal condition the more perfect will be our protection from disease. If we could imagine a universal acquiescence in the mandates of nature, we could conceive of a time to come, when there would be no disease germs in the world, since this species of organism would ultimately, become extinct, because of the gradually lessened fertility of the soil upon which they must depend for their continued existence, but, with this conception, practically an impossibility, it behooves each individual to look out for himself, and to see to it that his own particular body does not offer conditions favorable for the development of these germs.

[TO BE CONTINUED.]

Popular Recipes for Keeping Well.

The Bridgeton (N. J.) *Daily News* reports that at a recent meeting of a social club in that city the question for debate was: "How to keep well," and twenty members of the club gave their answers to it.

No. 1, keeps well by taking baths.

No. 2, by horseback exercise.

No. 3, by resisting disease and avoiding doctors. (This by an M.D.)

No. 4, by keeping clear of colds and never working when tired.

No. 5, by obeying all the laws of hygiene.

No. 6, by open-air exercise and oatmeal porridge.

No. 7, by keeping the mind content and taking a month's rest every summer.

No. 8, by boating on the Raceway and Sunset Lake.

No. 9, by never thinking about illness.

No. 10, by using the gymnasium and refraining from overwork.

No. 11, by moderation both in work and play.

No. 12, by daily sponge-baths and outdoor enjoyment.

No. 13, by horseback riding, cold baths and discreet dieting.

No. 14, by thorough mastication of all food and by genial companionship.

No. 15, by heeding the doctor and a sociable game of whist at our club.

No. 16, by guarding the health in such a way as to give promise of a hundred years of life.

No. 17, by avoiding extremes, eating carefully and sleeping as long as possible.

No. 18, by dieting.

No. 19, by all-around development, virtue, exercise, temperate living, baths, agreeable society and fair share of hard work.

No. 20, can't keep well, anyhow, and always forever ill.

NOTES AND COMMENTS

The Danger of Being a Good Samaritan.

A French court has decided that the person who summons a physician to see a sick person is responsible for the payment of his fees.

Diet for the Bald-headed.

Sufferers from premature baldness are now recommended to live on a diet of brown bread and oatmeal, which is said to possess remarkable virtue in promoting the growth of the hair.

British Nursing and Hygiene at Chicago.

From the *London Lancet* we learn that a very active sub-committee is arranging for a thorough display of hygienic progress and nursing, at the forthcoming Columbian Exposition.

Thistles as Food.

Thistles, according to the London *Vegetarian Federal Union*, are desirable articles for human food. If boiled they are like delicate turnip tops, and may be eaten, like spinach on toast, with poached or fried eggs, and with a little olive oil, or mixed with cream.

A New Cause of Measles.

An English health officer recently received the following note from one of the residents of his district: "Dear sir, I beg to tell you that my child, aged eight months, is suffering of measles as required by Act of Parliament."

Health Orders to Undertakers.

The Board of Health of Hartford, Conn., has issued orders to all undertakers in relation to the care of bodies of persons dead from diphtheria, scarlet fever, smallpox, typhus fever, or any other contagious and malignant disease. All such bodies must be thoroughly washed with a disinfectant solution of corrosive sublimate, seven and one-half grains to the pint. The whole body, including head and face, must be wrapped in cloths, saturated with this solution, and then be *immediately* placed in a tightly closed coffin and not exposed in any manner thereafter. All such bodies must be buried within twenty-four hours after death, or sooner when possible. All funerals of such persons must be *strictly private*, and public carriages must not be used for the removal of such bodies.

Compulsory Vaccination in Turkey.

According to the *Revue Médico Pharmaceutique* of Constantinople, the Turkish Government has decided to make vaccination compulsory throughout the Ottoman Empire.

The New York Board of Health.

The appropriation of the City Board of Health of New York amounts to $435,000. This is an increase over last year of about $15,000, but is an apparent decrease in current expenditure account, since $30,000 of the grant must be devoted to the erection of a new reception hospital.

The Deadly Hot Weather.

The fatal influence of excessively hot weather is well illustrated in the mortuary statistics of New York City, where during the last week in July, when the thermometer was up in the nineties, the death rate rose to 40.83 per 1,000 as against 30.80 for the previous week.

Unchaste Man.

The Professor of Latin in Columbia College says that there is no single word in any language to express the male equivalent of virgin, that is, a chaste man. Still there have been races, such as the ancient Germans, where chastity in males was a highly esteemed virtue; and it is one also which was diligently taught and pretty well practiced by the Christian men who founded this Republic.

Glycerin for Burns.

According to a foreign authority glycerin is the best application for burns. Applied at once to the burned surface, it occasions at the instant of application a slight feeling of burning, followed by complete relief from pain. Where the wound is large, it should be kept constantly moist with glycerin. By means of this application inflammation is almost entirely avoided, and sloughing takes place gradually, leaving a much less marked scar than is the case with ordinary dressings.

Celery Coffee.

A company has been organized in Glasgow, Scotland, as we learn from the London *Vegetarian*, to manufacture celery coffee. The celery is dried, roasted and ground, being sold in the form of a brown powder, from which a beverage is made which is considered exceedingly wholesome and valuable for dyspeptics, rheumatics and sufferers from nervous prostration. It is described as "free from those strong stimulative elements which render tea and coffee so dangerous." The celery growers should take the hint and use their trimmings for this purpose.

Temperature for the Baby's Bath.

The temperature of the water used for washing an infant should be nearly that of the surface of the body—96° or 98° F., writes Mrs. William E. Gladstone in the May *Ladies' Home Journal*. As the child grows older the heat of the water should be gradually lessened, while the limbs should be allowed free exercise in a large tub. Some children do not bear cold water well; good sense, discrimination and observation should be our guides in this as in all other matters.

Constipation.

Constipated bowels is a factor of no little importance in causing disease in women. My observation has led to the opinion that women who have uniform regularity of their bowels are seldom invalids, and nearly all invalids have a history of constipation or irregularity of their bowels. Here then we have the remedy too plain to be mistaken, keep the alimentary canal open regularly and systematically, and thus prevent disease.

Diabetic Diet.

Dr. Lauder Brunton (London) advocates, as an article of diet useful to diabetic patients, the pommes de terre frites, as cooked in France. They are not really fried, but the potatoes are cut in very thin slices, thrown into boiling oil, which browns them at once, and then they are taken out and dried. As a rule, English cooks, in attempting to make this dish, do not use enough oil, and they do not allow it to heat enough. They serve excellently to relieve the monotony of a purely proteid diet.

The Meaning of Wakefulness.

Continued wakefulness is a crying call to review one's habits and see what is wrong. There is, perhaps, mental unrest, irritation or overwork, in which case laziness is to be assiduously cultivated. We may depend upon it, there is some want of balance. One chord is played upon too much, others are silent, and so the mental mechanism is all out of tune. Wisdom, then, dictates a reconstruction of habits. At all events, the wise person will not resort to opium, chloral or any other sedative that steals away life while soothing it, and fixes habits which cannot be overcome.

Much depends upon the power of dismissing thought and becoming almost a blank. Napoleon had this faculty, and many another noted person. The late Lord Napier was believed by the British officers to owe his immense strength and power of endurance to the faculty of going to sleep at any moment when not particularly engaged. One of the famous politicians of Massachusetts, now an old man, yet with the vigor of a boy, has the same gift. In all these and in similar cases there is both concentration and determination—*Good Health.*

How Vienna Repulses Cholera.

In Vienna, a municipal order has been addressed to hotel proprietors, innkeepers and all persons engaged in providing accommodation for travellers which requires them upon the arrival of travellers from Russia or any country in which cholera is prevalent to immediately notify the municipal doctors of their respective districts. The doctors are also instructed to subject all such travellers to a thorough examination.

Ether Drinking.

Russia has become infected with the vice of ether drinking, and the pernicious habit has spread so rapidly that the government has judged it necessary to prohibit the free sale of ether and of certain of its compounds, and to schedule it among the poisons the sale of which, even by pharmaceutical chemists, is surrounded with severe restrictions, as was lately done in Ireland, at the suggestion of Mr. Ernest Hart. The measure has been very effectual in Ireland, and we hope it may be so in Russia.

The Effects of Tobacco Upon the System.

According to *Science*, in an experimental observation of thirty-eight boys of all classes of society and of average health, who had been using tobacco for periods ranging from two months to two years, twenty-seven showed severe injury to the constitution and insufficient growth; thirty-two showed the existence of irregularities in the heart's action, disordered stomach, cough and a craving for alcohol; thirteen had intermittency of the pulse and one had consumption. After they had abandoned the use of tobacco, within six months time one-half were free from all their former symptoms, and the remainder had recovered by the end of the year.—*College and Clinical Record.*

Bottling up Cholera Bacilli.

A significant commentary on the question of interment in city cemeteries *versus* cremation is suggested by the incidents connected with a proposal in the Leeds Corporation Bill to drive a street through St. Mary's Churchyard, where a great number of cholera cases were interred, and Dr. Spottiswoode Cameron, in reporting against the proposed improvement, says: "The whole of the district is shale and clay. The corpses have, therefore, been bottled up for these sixty years in a practically impervious casing. I find there has been no epidemic in that neighborhood within memory of my present inspectors, and I find no record of any whatever. My own feeling about the matter is that I should be inclined to let well alone. Although the chances are strongly that, during the sixty years that are gone, the coma bacilli have died of inanition, there is a possibility that it may not be so, and that the opening of these graves might lead to disaster." The clause will be withdrawn and the clay-conserved bacilli left at rest.—*British Medical Journal.*

Tobacco *versus* Consumption.

Dr. Theodore Griffin, of Kansas City, publishes a paper in which he contends for the probability of tobacco smoke being, in some degree, a cure or prevention of consumption, and he does not hesitate to advise moderate smoking for those who develop a tendency to this disease. But a short time since our Board, through its Secretary, instituted a systematic catechizing of the physicians of our State in reference to this very question, and the result did not seem to bear out Dr. Griffin's idea.

Is Tobacco Food and Drink?

Sanitarians will hardly agree with Supreme Court Judge Taft, of Vermont, who in a recent decision, says: "Tobacco is both a victual and a drink. It is taken as a nourishment, sustenance, food, etc., therefore a victual. It is not an obsolete use of the word to call it drink. Joaquin Miller says: 'I drink the winds as drinking wine.' If a man can drink wind I think he can drink tobacco quicker, vile and disgusting as it is. A man is compelled to drink it by having it puffed in his face on all occasions and in all places, from the cradle to the grave. It is a drink."

What They Eat in a Harem.

Readers curious in culinary matters will be interested in the following description of a favorite dish in Eastern harems. It consists of a lamb roasted whole, after the manner of a chest of Chinese boxes each smaller than the other, the lamb being stuffed with a whole turkey, the turkey with a whole chicken, the chicken with a pigeon, the pigeon with a quail, the quail with a becafico, which is the smallest bird except the humming-bird. Such a dish might be considered especially suitable to occasions when all the members of a family meet together, as there is something to suit everyone's taste, and what is more, there is sure to be plenty of it.

A Popular Fallacy.

While many parents think that it is better that children should have some diseases when young, one medical writer of note declares that it is certainly right to protect everybody from disease so far as possible, and that children, of all others, should be carefully guarded from all forms of contagion. There is none of the so-called children's diseases, unless it be chicken pox, but which is liable to be followed by a train of serious consequences, besides being sometimes fatal. In every way it is better to avoid all contagious diseases as long as possible, and it is quite possible that in adult life persons may escape these diseases altogether, or if they have them, it will be in a lighter form. The popular idea that grown persons have these diseases harder than children is fallacious. Adults are better developed and have the judgment necessary to co-operate in the treatment, which is lacking in children.—*Pacific Health Journal.*

The City of Sanitation.

We doubt whether the above title has ever been applied to any municipality prior to the issue of August 6 of the *Medical Record* of New York City. Referring to the recent meeting of the New Jersey State Medical Society at Atlantic City, the *Record* says, "the Society was welcomed to the city of Sanitation, etc., etc." We have always felt that Atlantic City was entitled to this distinction, but it has been reserved for the leading medical periodical of the United States to, officially, so christen it.

Sanitation of Cemeteries.

M. Brouardel, the Dean of the Paris Medical Faculty, M. Ogier, and M. Du Mesnil have reported to the Academy of Medicine concerning the sanitation of cemeteries. Their investigation has demonstrated that the speedy or slow destruction of the corpse is in direct proportion to the quantity of air which reaches it; in chalky soil, through which air permeates with difficulty, dead bodies become transformed into a fatty substance, *gras de cadavre*, which lasts five or ten years; but if the air freely circulates about dead bodies they are completely destroyed at the end of a year, owing to the action of certain insects.

Premature Baldness.

The tight-fitting hat worn by men is, in the opinion of Dr. Mary E. Allen, who so writes in the *Medical and Surgical Reporter*, most likely the cause of premature baldness. It is a fact that these hats by the very constriction of their tight fit interfere with the supply of blood to the scalp and thus diminish the supply of nourishment to the hair, which is an appendage of the scalp. In support of this view we are reminded that women (who are seldom bald) never wear tight-fitting head-gear, rather pinning the hat to the hair or fastening it by an elastic band under the coil of hair back of the head. If this idea be correct the means of prevention are obvious.

Physical Education.

The Congress of Physical Education recently met in Paris, and after a five day's meeting the following resolution was passed: "That every college, school or teaching institution whatever, primary or secondary, should have an open space where pupils can carry on games and sports. That shooting should be taught, target and shot being furnished by military authorities. Boxing, wrestling and fencing should be taught in all *lycées* and colleges. Swimming should be compulsory. A model running ground should be laid out, and a sum should be given for buying velocipedes. That children under thirteen should be forbidden to learn bicycling. That pure wollen clothes should be worn in all schools during the exercises. A register of the physical condition of each pupil should be kept after the examinations of physical exercise; his dexterity, chest girth and the functions."

Vital Statistics of Total Abstainers.

It is interesting to learn that the annual report of the United Kingdom Temperance and General Provident Institution for 1891 confirms the experience of the previous twenty-five years. In the Temperance Section the expected deaths were 321, and the actual deaths 240, or 70.8 per cent.; in the General Section the expected deaths were 386, and the actual deaths 425, or 110.1 per cent. The total deaths in the twenty-six years in the Temperance Section were 3,663, that is 70.7 per cent. of the 5,177 expected deaths; in the General Section they amounted to 7,034, or 97.5 per cent. of the 7,277 expected deaths.

The Secret of Father Mollinger's Cures.

Father Mollinger, whose supposed miraculous cures created great excitement in Troy Hill, near Pittsburg, a year ago, died in the early part of June. He did not rely upon faith alone, but prescribed drugs and accompanied the prescription with most explicit directions. The druggist who filled most of these prescriptions, in an interview with a reporter, said that "the secret of the Father's success lay in the fact that his patients always followed his instructions to the letter. They had faith in him, and no matter what he told them they did it." There is more in this than the believers in the dead priest's thaumaturgical gifts would perhaps be willing to concede.

What to do at Saratoga.

Rise at 7 A.M.; go to the spring (Congress, Carlsbad, Hathorn or Empire,) drink a glass of water, hot; walk ten minutes; another glass of water, hot or cold; walk for half an hour to an hour. Breakfast, consisting of milk, eggs, meat, coffee or tea diluted; avoid raw fruit, hot rolls or fresh bread. Then go to stool. At 11 A.M., one or two glasses of Vichy (medium), walk for half an hour or so. Dinner at two; eat no fried meats or fish, no salads, no corn, no pastry, no raw fruit. Take a rest or a nap till five, then a walk or a drive. At six, one glass of Vichy. Supper at 7.30; light diet—milk, toast, eggs, stewed fruit. At nine, another glass of Vichy, and retire at ten. This plan is to be kept up for not less than three weeks, avoiding all mental excitement. If there is a rheumatic tendency, the Red Spring or magnetic baths three or four times a week; Vichy with meals, and Geyser at night have given satisfactory results. Diabetics and patients with uric-acid diathesis do extremely well on Vichy or Kissingen in large quantities. In chlorotic and anæmic patients I have been much pleased with the effects of Columbian or Washington (the iron waters), being careful to tell my patients only to drink these waters from one and a half, to two hours after eating, for, unless these directions are given, the patients always complain of severe headache after taking the water. These waters just mentioned I have found most satisfactory; but there is no doubt of the efficacy of many of the others, and the paper would be too long, were I to attempt to describe the uses of each of the twenty-eight springs.—DR. L. RAU, *New York Medical Journal.*

International Health Association.

The International Health Association will meet in the city of Mexico, in November, 1892. The Association at present comprises the United States, Canada and Mexico, but it is hoped that the Central American Republics will also join it at the next meeting. Dr. Watson, the secretary of the Association, while travelling in Mexico, induced the health authorities of that republic to enter into a plan of international and interstate notification of the outbreak of contagious and infectious diseases, such as already exists between the United States and Canada, by which every state, province and town are immediately advised of the appearance of disease in any foreign locality, of its nature, the number of cases and other particulars.

Arsenical Wall-papers in England.

The Lancet has had a special analytical commission sitting on this bugaboo, and it comes to the following conclusion: "Owing doubtless to the action of the medical profession in unanimously condemning the practice of employing arsenical colors in wall-papers—an action in which *The Lancet* took no small part—wall-papers loaded with arsenical pigment have apparently become a thing of the past, for among many specimens obtained by us from several respectable makers, those containing any arsenic at all contained it in almost imperceptible quantity, while others gave no response to a test which serves to detect the one fifty-thousandth part of a grain. Notwithstanding all this, it is necessary that a careful examination of wall-papers selected haphazard should from time to time be made in order that this satisfactory state of things may be maintained."

The Drunkard's Posterity.

Demme studied ten families of drinkers and ten families of temperate persons. The direct posterity of the ten families of drinkers included fifty-seven children. Of these twenty-five died in the first weeks and months of their life, six were idiots, in five children a striking backwardness of their longitudinal growth was observed, five were effected with epilepsy, five with inborn diseases. One boy was taken with chorea and became idiotic. Thus of the fifty-seven children of drinkers only ten, or 17.5 per cent. showed a normal constitution and development. The ten sober families had sixty-one children, five only dying in the first weeks; four were affected with curable diseases of the nervous system; two only presented inborn defects. The remaining fifty—81.9 per cent—were normal in their constitution and development. From this series of investigations we derive the sad truth that among the children of drinkers the prevailing mortality is fearful, that the surviving represents a pitiful crowd afflicted with unsoundness of mind, idiocy, epilepsy and other disturbances of their nervous system, and that only a very small proportion of the descendants grow up as useful members of society.—*Herald of Health.*

Dairy Cows.

Before the late meeting of the State Medical Society of New Jersey, Dr. H. L. Coit, of Newark, read the report of the committee on this subject. The importance of the subject was made evident by the statement that over two billion dollars were invested in the dairy business in the United States; four million farmers owned fifteen million cows; over six billion and a half gallons of milk were produced. The reader here showed how rapidly milk deteriorated, the influence thereon of improper food given the cows, and made mention of adulterations. Milk's greatest enemy are bacteria. It appeared that New Jersey's cows wot being better cared for, but the greatest evil in the feeding line is the use of brewery waste, which renders the milk watery, is wanting in certain of the nutrient elements, and likely to ferment early. Other points brought out referred to tubercular cows, cleanliness, etc.

Prevention of Blindness.

A committee was appointed by the Medical and Chirurgical Faculty of Maryland in April, 1891, to devise means for lessening the amount of blindness from curable diseases. This committee prepared a circular which was sent to the midwives of Baltimore explaining the dangers of ophthalmia neonatorum, and giving directions for cleaning the eyes of the newly born. The necessity for prompt medical interference at the first sign of the disease was also insisted upon.

In addition, in the waiting rooms of the various dispensaries of the city they placed placards, reading as follows: "Watch a baby's eyes carefully for a week after birth. If they look red or run matter, take it at once to a doctor. The child may become blind if not treated properly." Such work can hardly fail to prove of much value, and should be imitated elsewhere.—*Jour. Am. Med. Ass.*

Equatorial African Sanitation.

The king of the Belgians has offered a prize of five thousand dollars, to be awarded in the year 1897, for the best presentation, from a sanitary point of view, of the meteorological, hydrological and geological conditions of equatorial Africa, together with the hygienic principles and rules to be observed in determining the mode of life, the character of nutrition, the form of occupation, the variety of clothing, and the kind of habitation. The essay must also include a consideration of the symptomatology, the etiology and the pathology of the diseases peculiar to the country, together with the prophylactic and therapeutic measures to be adopted. Principles are to be formulated for the selection and employment of medicaments and for the establishment of hospitals and sanitoria. The investigations and the conclusions are to bear upon the conditions of life for Europeans in the various parts of the Congo region. The competition is open to the world. The essays must be in the hands of the minister of the interior and of public education in Brussels by January 1, 1897.

Deep Breathing.

A device has recently been invented for promoting deep breathing. It consists of a small belt that encircles the chest at the point of its greatest expansion, and a take-up mechanism to which the ends of the belt are attached. The take-up mechanism consists of a coiled spring, adapted to tighten the belt at intervals, and a train of wheels by which the speed of the spring in taking up the belt may be regulated. Upon the exhalation of the breath after the full expansion of the lungs, the chest returns to its natural size in ordinary breathing, thus leaving the belt loose. Immediately the take-up mechanism begins to gather in the slack of the belt, tightening it until its pressure is uncomfortable, compelling another inspiration, thus lengthening the belt. This lengthening is accomplished by the withdrawal of the strap from the case, thus lengthening the belt. It is claimed that the device induces full breaths at regular intervals, thus naturally enlarging the lungs and chest.

Diphtheria from Rags after Nine Years.

The absolute necessity for disinfection and the supreme fact that in this procedure alone can be found immunity from the propagation and transmission of contagious diseases, is again well illustrated by the case recently reported by Dr. L. J. Rhea, of Carey, Iowa. He was called to see a child eight years old, and found a fully developed case of diphtheria, followed in the course of ten days by five others. There were no cases in the neighborhood, but upon investigation it was found that the father three days previously had bought a sack of old rags from a neighbor, who, nine years before had taken them from a house where diphtheria prevailed, and of a very malignant type. The sack was opened by the children and some false hair was found, with which the children amused themselves. During this time, the rags had remained undisturbed in an old outhouse.

Fighting Mice with a Bacillus.

Professor Lœffler's bacillary crusade against the field mice of the Thessalian plain has ended in victory. The latest reports announce that the fields are strewn with the corpses of mice. It will be remembered that Professor Lœffler some time ago discovered a new bacillus, the "bacillus typhi murium," which has the power of producing a certain disease in mice, and in mice alone. A plague of field-mice, threatening to destroy the harvest, having appeared in Thessaly, he was appealed to by the Greek government, and immediately started for Athens. He began his experiments by treating field mice in the laboratory with injections of his bacillus cultivation, and when these experiments showed his method to be undoubtedly the right one, he started for Thessaly with a staff of Greek doctors. Breadcrumbs, saturated with the bacillary substance, were strewn broadcast over certain fields, and as early as a week later the results were visible. Success being now assured, Professor Lœffler will return to Germany, and the bacillus cultivation will be carried on at the seat of war itself.—*Medical Record.*

How Germany Handles Cholera.

In Germany, an invasion of cholera seems to be regarded in the same matter-of-fact, practical, common-sense way that would an invasion of a belligerent human force. Prayers, incantations and listless despair are not the weapons with which the disease is met, but the country is reassured with the assurance that, in case of an outbreak, the government has only to telegraph one word, "Mobil," to the sanitary authorities throughout the country in order to put the very effective regulations of 1884 into operation. The system consists in a very thorough inspection of all trains coming across the frontier from infected countries, and it is carried out by the co-operation of conductors and passengers. As soon as any passenger is found to show any suspicious symptoms, he is delivered into the charge of a railway doctor at the next station. The carriage (or car) in which he has travelled is uncoupled and left behind and the whole train is disinfected. There will be no frontier quarantine or general disinfection, nor will the postal service be interfered with.

Japanese Grimacers.

It is of interest from a hygienic point of view, because it is a source of merriment that does so much for the preservation of health, while it possesses, also, a general interest, to read of the grimaces of the celebrated burlesquer from Kiota, one Morimoto by name.

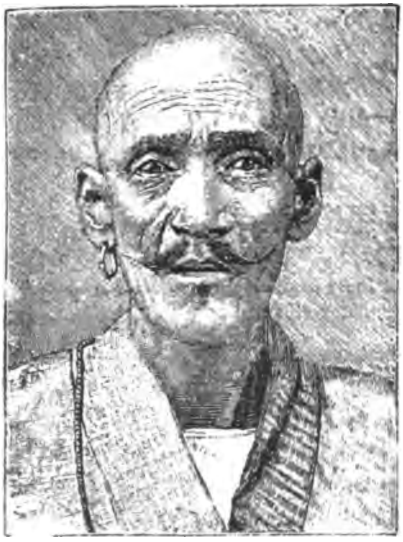

FIG. 1.

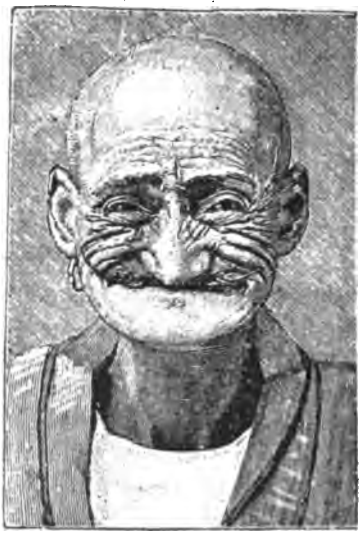

FIG. 2.

The first engraving represents Morimoto as he appears normally. The second and third pictures show him as he appears on the stage when representing the god of riches. He has a sack on his back and a stick in his hand which he pounds on the floor; thinking he has found hidden treasure his countenance lights up as in Fig. 2. The treasure, however, proves to be a delusion, and the actor's disappointment is shown in Fig. 3.

In Fig. 4 Morimoto burlesques Daruma, a god found in nearly every Japanese household. He is covered with a cloth, as this god has no legs, tradition stating that Daruma lived on the mountains and walked about so much that his legs were gradually worn away. Daruma, it is stated, came originally from India in the sixth century of our era and was the first to introduce tea to the Japanese.

The Japanese are very fond of the grotesque, this feeling extending even to their parks and gardens, and trees and plants are trained to assume the most ridiculous forms. Trees that would normally grow straight up are made to run along supports stuck in the earth, or they may be made to form circles or grow in a zigzag manner.

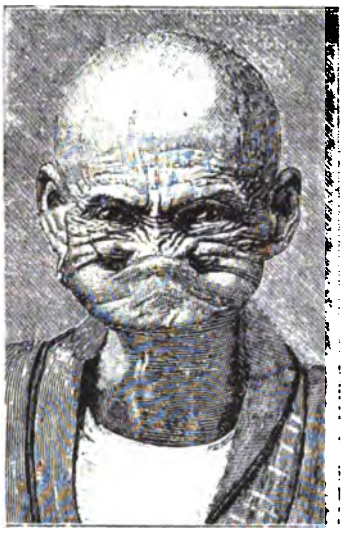

FIG. 3.

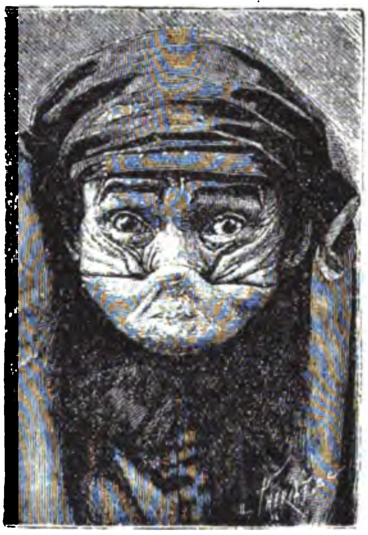

FIG. 4.

Some of these grimacers have a remarkable power over their countenances and they never fail to draw crowds and force screams of laughter from their ludicrous-loving audience.

A Temporary Infant Food.

According to Dr. A. Jacobi the white of an egg, with a little salt and six ounces of water, well beaten and shaken, is a good mixture, which can take the place of infant food temporarily, but is an invaluable makeshift in severe intestinal catarrh, or a permanent nutriment in the same when added to other food.

"IF I was pa an' ma," said little Willie, "I'd hire another doctor. The baby we got last time wasn't finished; it hadn't a tooth or a hair."

Cheese.

It is generally recognized that cheese is indigestible, and for ourselves, we can never regard it as anything but *rotten* milk. This "plain-English" idea of ours receives scientific support in the following language which we find in *The Bacteriological World*:

> "Microscopical and bacteriological studies of cheese show that it swarms with microbes of various sorts, and as is now well known, the flavors characteristic of the different varieties of cheese are wholly due to the products of microbic action; the older the cheese the more numerous the microbes, hence the greater probability that its presence in the stomach will set up fermentative or putrefactive changes in the food-substances which have been eaten. Prof. Vaughan's researches have shown that cheese always contains a larger or smaller amount of tyrotoxicon, and doubtless also the microbes by which this powerfully toxic agent is produced. Cheese must certainly be regarded as a questionable article of diet. It should be mentioned, however, for the benefit of those who will insist upon retaining it in their dietary, that its most noxious properties may be neutralized by cooking."

Flies as the Bearers of Contagion.

A Japanese bacteriologist, says the *Medical Press and Circular*, has made some investigations tending to show the rôle played by flies in the spread of infection. He finds that these ubiquitous insects may be one of the means by which tuberculosis and anthrax are disseminated. He believes that he has been able to trace the conveyance by them of microbic elements from infected human excreta, the oder of which is detected by flies at apparently vast distances; the bacilli have their vitality fully fostered amid the moist environment of the flies' alimentary canal. Infection of food-substances becomes the next step, which is in all probability effected by the lodgment of the bacilli having spores from the bowels of the flies as they rapidly flit from one object to another. These food substances, with the pathogenic fly-filth upon them, are next ingested by man, who if he is in a proper state of receptivity, absorbs and becomes infected by one or the other of his microbic enemies.

The People are for Hygiene.

Dr. J. Berrien Lindsley, the Secretary of the Tennessee State Board of Health, is a veteran Sanitarian, who for many years has been studying the signs of the sanitary heavens, and we can, therefore, accept what he says without any grains of salt. Concluding an address on hygiene, the doctor uses these significant words: "Let it be emphatically stated that of all the reforms projected and pushed in this busy nineteenth century, none touches the great masses more closely than this. The people, the working and voting people are with us. Read the manifestoes of the numerous labor organizations of America in which are gathered not only the sinews but the brains of a mighty people, and you will see as a keynote running through the whole diapason, the sacredness and value of home, of wife and children. And hence constant allusions to sanitary wants and improvements. No better sign for the future permanence, grandeur and happiness of the greatest nation upon whose domain the sun has as yet shed its rays, could be desired."

The Use of the Flesh of Poisoned Animals.

This subject has been studied by Schmidt, of Mülhein, with a view to determine whether if eaten by men, such flesh would be injurious. As reported in the *Revista Internazionale D'Igiene*, of Naples, for June, 1891, it may be used without any danger whatever. Many savage races constantly use the flesh of the animals that have been killed with poisoned weapons, and have never been injured by that means.

Harms has proved that the flesh of animals that have been poisoned with nux vomica and with tartarized antimony, is not at all hurtful; Feser has demonstrated the same fact in regard to strychnine and eserine; Spallanzani, Zappi and Sonnenschein, have done the same for arsenic.

In regard to the alleged injurious effects caused by eating the meat of animals poisoned with hellebore, and which had eaten belladonna leaves, the authors have shown that the accounts published in this regard have not been proved, and require further tests.

The *Revista* says that in the interest of meat inspection, it is desirable that experiments should be made with other poisons. Notwithstanding this evidence we would not commend the use of poisoned meat.

New York and St. Paul.

Two things much impressed that eminent and observant author, Mr. Rudyard Kipling, while making a tour of the "States;" on the one hand, the unkemptness and misrule of New York; on the other, the scarlet fever signs of St. Paul. Concerning the first he says, among other things, this: "It is neither seemly nor safe to hint that the government of the largest city in the States is a despotism of the alien by the alien for the alien, tempered with occasional insurrections of the decent folk. Only the Chinaman washes the dirty linen of other lands."

But to St. Paul, after discoursing upon the beauty of its suburbs, he gives this final tribute of respect and admiration: "One little brown house at the end of an avenue is shuttered down, and a doctor's buggy stands before it. On the door a large blue and white label says 'Scarlet Fever.' Oh, most excellent municipality of St. Paul! It is because of these little things, and no rowdying and racketing in public places, that a nation becomes great, and free, and honored. In the cars to-night they will be talking wheat, girding at Minneapolis, and sneering at Duluth's demand for twenty foot of water from Duluth to the Atlantic, matters of no great moment compared to those streets and that label."

Mr. Kipling lays great stress, and properly, upon the importance of preventing scarlet fever. New York, however, does not deal with this problem in any backward or unintelligent spirit. The use of the sign may answer for suburban localities, but its introduction into large and crowded cities has not yet proved to be wise or practicable. New York furnishes some excellent illustrations of smart politics and stupid citizenship, but in the matter of sanitation and public health there has been little to criticise.—*Medical Record.*

How to Prevent Leprosy.

We quote from *The Lancet:* "Kunsamo, a little town in Finland, was for a long time a small but obstinate focus of leprosy. Sixteen deaths from that disease occurred there between 1774 and 1800, and twenty-two between 1801 and 1828. As the diseased appeared to be spreading, it was determined, in 1807, to enforce isolation. A building was erected on a small uninhabited island in Lake Kitkajarvi, and the lepers were removed to that place. There they remained until 1845, when the hospital system was abolished and the medical officer of the district was instructed to visit the lepers twice a year in their own houses and to report on their condition to the authorities. These reports were made with regularity for twenty years, during which time eleven cases of leprosy came under observation. After 1865 no further reports appear to have been presented, and in 1871 the medical officer reported that he was unable to find any more cases of leprosy in Kunsamo. The stamping out within a comparatively short period, of a disease which had probably smouldered on for centuries, may be commended to the attention of the opponents of the segregation of lepers."

Aerial Transmission of Typhoid Fever.

Dr. Sicard, of Beziers, has reported to the Paris Academy of Medicine his series of original investigations regarding the spread of typhoid fever through the atmosphere. His plan was to have his typhoid patients breathe through tubes into water that had first been sterilized. Specimens of water thus treated were frequently found to yield the characteristic bacillus, under cultivation. This amount of success did not always attend Dr. Sicard's experiments, and this is not at all surprising in view of the fact that the typhoid bacillus has been found to be elusive, by the best of bacteriologists, under conditions that were strongly indicative of its presence. But Dr. Sicard's results were sufficiently uniform to warrant an inference that the expired breath of typhoid patients, like that of typhus fever, may serve as the channel for fever infection. For many years the infective properties of the expired breath of ship fever has been taught by every recognized authority, but with regard to typhoid fever the teaching has not been so general and positive. But Dr. Sicard's observations, if fully confirmed, must modify our former conceptions, and it will become our duty to put upon their guard all those who attend upon the typhoid patient.

The vast majority of typhoid infections have their origin in a contaminated water supply, but every observer has been puzzled more or less by cases of the disease which have arisen apart from any known inculpation of the drinking water. These obscurely originated cases may belong to the group whose bacillar contact is atmospheric—not simply by means of the breath of the sick, but also by the emanations from sewers, cesspools and other receptacles of typhoid excreta.—*Journal American Medical Association.*

The Famine and Typhus in Russia.

A Russian physician writes to the *British Medical Journal* that the situation in Russia, appalling as it has been for some months past, continues to grow even worse from day to day. As has been prophesied by many Russian medical men long ago, in many of the famine-stricken regions there broke out formidable epidemics of typhus, typhoid and recurring fever (as well as of small-pox, diphtheria, scarlatina, measles, etc.), to spread ever farther and farther. At present the pestilence (especially typhus and typhoid) are raging in the following governments: Kazan, Perm, Simbïrsk, Samara, Saratov, Ufa, Orenburg, Odessa, Kharkov, Tambov, Lublin, Suwalki. There can be scarcely any doubt that the advent of the spring season will cause a further aggravation of the epidemics. The *zemsky* (country councils) doctors do their utmost in their truly heroic struggle both with starvation and disease; but, most unfortunately, the financial means at their disposition are exceedingly small, and thus all their efforts and self-sacrifice remain useless. The Imperial Government, with their dishonest and ignorant officials, are absolutely incapable of rendering any effective and rational aid. Count L. N. Tolstoï utilizes the funds at disposal only in the Rïazan Government, which is suffering comparatively to a much smaller extent. In November, 1891, Professor V. A. Manasseïn opened in the *Vratch* a special subscription list, all sums received being immediately sent directly to the medical men of the famine-stricken *zemztvos* for the distribution of food, etc. Up to the present, however, the sums collected in that way, and contributed mostly by the members of the medical profession, have been utterly trifling.

SPECIAL REPORTS

State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania.

PRESIDENT,

S. T. DAVIS, M.D., of Lancaster.

SECRETARY,

BENJAMIN LEE, M.D., of Philadelphia.

PEMBERTON DUDLEY, M.D., of Philadelphia.
J. F. EDWARDS, M.D., of Philadelphia.
J. H. McCLELLAND, M.D., of Pittsburg.
HOWARD MURPHY, C.E., of Philadelphia.
GEORGE G. GROFF, M.D., of Lewisburg.
S. T. DAVIS, M.D., of Lancaster.
BENJAMIN LEE, M.D., of Philadelphia.

PLACE OF MEETING,

Supreme Court Room, State Capitol, Harrisburg, unless otherwise ordered.

TIME OF MEETING,

Second Thursday in May, July and November.

Meeting of the Michigan State Board of Health, July 12, 1892.

RELATIVE to the reported presence of cholera in foreign countries, and the possibility of its being brought to this country, Dr. Baker remarked that it would be a particularly unfortunate time if cholera should soon reach Chicago or Detroit, because it tends to spread in much the same way as typhoid fever, only with much greater rapidity, and typhoid fever is unusually prevalent in Chicago, and appears to have been increasing lately in Detroit. If cholera should gain entrance to either city, so many of our people visit those cities, that we might soon find cholera spread in many places throughout Michigan. This office is prepared to issue circulars, already printed, advising local health officers just how to restrict cholera.

Secretary Baker stated that during the quarter, reports had been received and action taken on 451 outbreaks of the dangerous diseases in Michigan, including two outbreaks of smallpox, each confined to the first case; 1,091 pages of letter book have been used in copying the correspondence of the office (not including postal cards, printed or hektographed letters). There were 2,159 pages hektographed, of which 1,068 were notices to health officers of infected immigrants destined to their localities. During the quarter there had been received, mostly in exchange for publications of the Board, 387 journals (weeklies, monthlies and semi-monthlies), and 68 books and pamphlets, making the total number 8,229 in the library of the Board (excluding journals not yet bound).

The Secretary presented the subject of infected immigrants, and to illustrate a point read a letter from a township health officer, stating that he had found, isolated and vaccinated the person of whom he was notified as possibly infected with smallpox also reporting his action concerning one of the immigrants, of whom he had received notice, who had come down with measles. The expense incident to these cases was about seventeen dollars. He thought the National government might go a step further and detain at the seaboard those immigrants likely to be infected.

The Secretary presented the subject of a "Sanitary Day," after the manner of Arbor Day, Labor Day, etc., which had been proposed in Pennsylvania, where it was designed to have a day set day apart for general and special "cleaning up." His opinion having been asked, he had expressed the view that it would be a good thing; but he thought a much more important sanitary day would be such a one as he had proposed at the last meeting of the Michigan Medical Society,[1] namely, one provided for by a law similar to the one providing for the annual school meeting—a sanitary meeting which should determine the amount of money to be raised for public health purposes. This would supply occasion for placing facts as to the restriction of the most dangerous diseases before the voters who contol the expenditures. School money is voted by the people after the subject has been carefully put before them. The interests of health and life of the whole people, including the children, are of more importance than the school education of the children alone. The health interests suffer because they have not been supported by the people. Dr. Baker believes they would be properly supported if facts were carefully put before the people every year at a sanitary meeting similar to the school meeting in September.

The minutes of the meeting in Detroit of members of the State and City Board of Health and others were presented, as also additional data obtained by correspondence, showing that some of the most dangerous diseases are not being restricted in Detroit; that this is, in some measure, due to the absence of a proper public opinion such as is built up in those localities in which the methods of the State Board of Health are accepted and enenforced. One important method not enforced in Detroit, being the distribution *to the neighbors of houses placarded as infected*, of pamphlets stating the law and the best measures for the restriction of the particular disease then threatening. In time such pamphlets, endorsed and issued by the authority of the State Board of Health, reach all the people and build up such a public sentiment that the most dangerous diseases can be restricted.

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[1] *Journal American Medical Association*, May 21, 1892, p. 161.

The Annals of Hygiene
VOLUME VII. PHILADELPHIA, OCTOBER 1, 1892. No. 10.

COMMUNICATIONS

Apropos of Cholera.*

BY CYRUS EDSON, M.D.,
Chief Sanitary Inspector of the New York City Board of Health.

ASIATIC cholera, so called from the fact that it is a disease endemic in parts of Asia, is a malignant disease of the blood, caused by the presence in the intestines of bacilli in countless myriads. The bacillus, discovered by Koch, and named the "comma" bacillus, because it resembles the comma in shape (,) increases by segmentation ; that is, it divides itself into two parts, each becoming of full size and dividing again. The bacilli are given off in the discharges from the bowels, and cholera may only be caught by taking the bacilli into the mouth and stomach in some way. They are infinitely small, so small that I have no words in which to convey an idea of their lack of size. They may be carried in the dust blown about the street, but the media through which they usually reach human beings are the water drunk or the food eaten.

The spread of cholera, it being a purely infectious disease, and requiring the bacilli to be swallowed, is through the persons infected or suffering from it or through their infected clothing. How long the bacilli will remain active in a dry state is not definitely known, but for practical purposes I can say that any clothing exposed to infection is dangerous so long as the bacilli have not been killed. Cholera, like other diseases we call epidemics, spreads along the ordinary routes of travel. Each person infected becomes in turn a centre of infection for others, and the disease would therefore move from country to country like the widening circles in water were there no travel whatever. The universal movement of to-day, however, hastens its march greatly.

While Cholera is endemic in Asia, and always makes its appearance during such great religious festivals as the pilgrimage to Mecca or the festival of Juggernaut, it does not travel to Europe every year. This is because the disease does not always acquire that virulence which will develop a germ of sufficient malignity to travel. Why this should be so I do not know, but all facts point to the conclusion that sometimes the germ or bacillus is of greater potency and strength than at others, and this is true of all infectious diseases.

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* Abstracted from the *North American Review* for September.

The present outbreak appears to have had its origin at Meshed, in Persia, a resort of Mohammedan pilgrims second in importance only to Mecca. As the pilgrims dispersed they carried the disease with them, and had any country except Russia been in the line of march, cholera would have been kept out of Europe.

The practical question which concerns us in this country is the danger to which we are exposed. As water and food are the carriers of the germs, it follows that these must be carefully watched should the disease find a lodgment here. It is most fortunate that the cholera bacillus can neither stand heat nor cold. A few days of sharp frost will stamp an epidemic of the disease out. Food must be eaten while hot and fresh from the fire, and water, in cholera times, must be boiled. The extraordinary freedom from cholera which has always marked the Chinese of the southern provinces of the Celestial Empire, living as they do amid almost typical cholera conditions, and with a disregard of sanitation almost sublime, has been credited to the universal habit of tea drinking. In other words, the fact that the Chinese never drink water which has not been boiled probably accounts for that other fact that there are any Chinese left to drink anything. While this is putting it strongly, it is not an unpardonable exaggeration.

It is necessary that the most absolute cleanliness, especially of the hands, be observed and particularly for those who handle food. The germs may easily be found on such things as straps in cars, balusters on public stairways, door knobs, money, and the like. I cannot too strongly state the fact that the chances of infection, were the cholera to break out to any extent, would be almost innumerable and that no amount of precaution, therefore can be too great. A person whose hands in any way come in contact with the discharges of a cholera patient could easily infect hundreds of people by leaving the bacilli where they could attach themselves to other hands. There is another danger, and one which is serious, existing in the common house fly. It has been shown that these insects can carry the germs about with them. One reason why food should be eaten hot from the fire in cholera times is because then flies will not light on it, and all bacilli on it prior to cooking are killed by the heat.

In case a person is attacked by diarrhea during a cholera epidemic two dangers are to be avoided. The first is that of a senseless panic; it is by no manner of means certain he has cholera. At the same time we must proceed as though he had in order to avoid the second: that of infection. All discharges should be disinfected at once. For this purpose a solution of seven grains of corrosive sublimate to a pint of water must be kept. It is well to have a large demijohn of this made up and to use it freely. Not only must all the discharges be covered with it, but the patient and any person coming near the infected matter must wash the hands thoroughly in it.* In a word, everything in any way exposed must be disinfected. Of course, at such a time a physician would be called in at once, and to him must be left the treatment of the case. This article is not designed as a treatise on the treatment of cholera.

So far as the care of the health goes, were cholera to break out, it is not difficult to give directions. Fortunately for us when we are in health we can resist disease germs even if they are taken into the system. The care for ourselves during a cholera outbreak is, therefore, merely that care we should properly take at all times. We must take plenty of sleep, a fair amount of exercise, eat very plain food thoroughly cooked, drink water that has been boiled and allowed to cool in bottles on ice, let raw fruit alone, wear light flannels, and in general lead as rational a life as may be. No precaution against cholera or any other disease equals perfect health, for with this we can defy it.

It is well here to say a word about liquor. Many people believe that brandy, if taken freely enough, will save them from cholera. That brandy has its uses I would be the last to deny, but, assuredly, one of these is not drinking it all the time when there is an epidemic of cholera to the fore. To those who have this idea it is far more dangerous than the disease, and for this reason: The one thing necessary is to keep the health as perfect as possible. Now every one knows that constant drinking weakens the person who drinks and deranges the stomach, and that weakness and disordered digestion invite disease.

Cholera may be of the mildest possible type, so that a person is not confined to the house for more than day or two, it may kill within one hour of the attack. It is a disease which cannot be trifled with in any way, and were there an outbreak of it in the city, a physician should be consulted the moment the patient is sick. It is better to make twenty mistakes than to neglect one real case. It is also necessary in cholera time that when a person is attacked with any sickness, especially one accompanied by diarrhœa, that the patient, with the nurse, be quarantined at once. Neither should mingle with the other persons in the house. All clothes, vessels, or anything else from the sick room must be placed in the disinfecting fluid described before being handled by others. No amount of precaution is too great in this regard.

Finally it is well to notify the health officers of the place at once. This notification will, in no way, injure the patient, while it may be the means of saving the lives of that patient's fellow-citizens. To my mind when such diseases as cholera, typhus, or yellow fever are among us, he who, from a selfish fear of inconveniencing himself, hides the disease from the health authorities, is morally guilty of all that may result from his act.

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*This solution is poisonous, if taken internally.—Ed.

Physical Culture.

BY JOSEPH F. EDWARDS, A.M., M.D.

PRIZE-FIGHTING would seem to make very opportune a few words on physical culture. Since the object of physical culture is the acquisition of physical strength, let our readers clearly and definitely understand that there are two kinds of physical strength: (1) vital strength; (2) muscular strength, and that while these two kinds of strength are, to a certain extent, closely related, they are by no means identical. While muscular strength, as typified by such men as Sullivan and Corbett, will enable one to lift great weights, to strike great blows, to pull great loads, it is vital strength, as typified by such men as Pope Leo, Dr. Oliver Wendell Holmes, Cardinals Newman and Manning, Tennyson, Von Moltke, Gladstone and De Lesseps, that enables one to attain longevity and to do so in health, comfort and with pleasure. It would be an easy thing for Sullivan, or any one of the class which he typifies, to seize by the neck the Pope and twist him

CARDINAL NEWMAN.

about as one would a chicken, yet it is unlikely that this same twister would ever attain two-thirds of the longevity vouchsafed to the latter. While, therefore, moderate muscular development may be regarded as conducive to vital strength and thus to health and longevity, he who would pass an impartial verdict must conclude that excessive muscular strength not only does not conduce to vital strength, but that the means by which it is attained are directly opposed to the greatest measure of vital strength, to the best health, to the greatest longevity. It is the popular notion that great strength means great health, that is to say, great muscular strength, and he who exercises for strength erroneously concludes that he is thereby con-

TENNYSON.

GLADSTONE.

POPE LEO XIII.

serving his health. I would be correctly understood, I would not have the impression conceived that I am broadly stating that physical culture, that muscular development is detrimental to health; by no means; but what I would like to have clearly understood is that he who exercises that he may develop his muscular strength to its highest possible capability, is thereby lessening his store of vital strength, and I would have the distinction that I have drawn between muscular and vital strength ever in mind during the discussion of this question.

I was recently in attendance upon an old lady, whose family insisted and persisted that she was dying, because, as they expressed it, "she was so very weak." I examined her heart and assured them that she would not die because, as I expressed it, "her vital strength was so strong." This woman had been confined to bed for a long period and, for want of exercise, as an inevitable consequence, her muscles were weak, and taking this muscular weakness as an evidence of her condition the family were alarmed, while in truth the heart, the index of vital strength, assured me that there was no danger. So now, recognizing that there are two kinds of strength, we must decide that which we wish to cultivate; whether it be solely or principally the muscular, that we may be able to perform astonishing feats of strength, or whether it be the vital that we may enjoy good health, immunity from disease, happiness and longevity. That great muscular development does not insure long life is well attested by the short lives of professional athletes, which while possibly partly due to other causes, may yet be mainly attributed to their over-muscular development, or to the effects of the exercise incident thereto. I have been asked whether I could give any rule that would serve as a guide to distinguish between healthy and dangerous physical development, and I answer

CARDINAL MANNING.

COUNT VON MOLTKE.

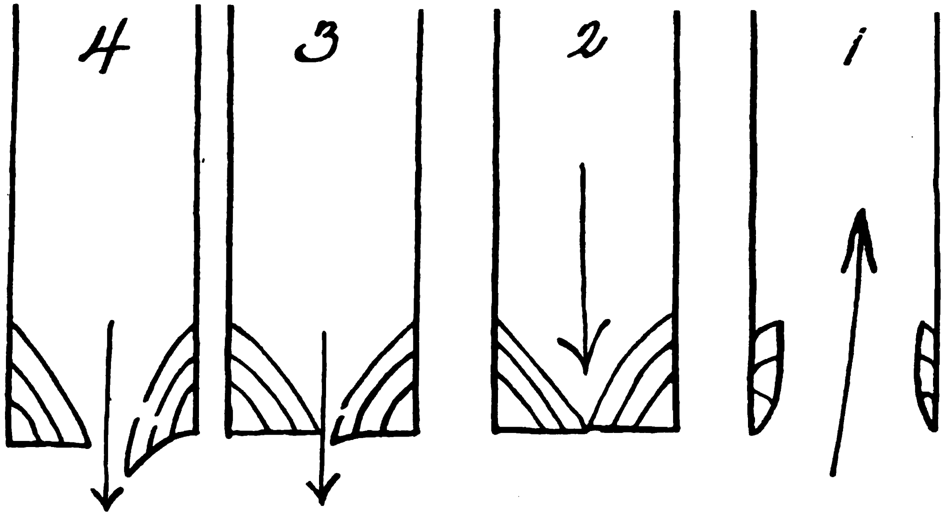
yes, an absolute and unfailing sign. Physical development is the result of exercise and exercise means motion; whenever any muscle of the body is in motion it is being exercised, and this motion causes the disintegration of the tissue that has been exercised, and requires that the heart shall pump some blood to this part to replace the tissue that has been used up. If, then, you are exercising and you commence to be conscious that you have a heart by feeling its pulsations in your chest, the danger line has been reached, and if you continue this exercise it will be at your peril. Here, then, is our infallible guide—the action of the heart.

It is a fact that a healthy man should be unaware of the existence, within him, of any organ, save as the grand result of their healthy working is made known to him in the sense of glorious pleasure that a healthy existence confers. Just as soon as any special feelings about the stomach, the liver, the kidney, the heart or the brain forces the presence of these organs upon the attention of a man, then may he be sure that the particular organ to which his attention is directed has lost its integrity, posssibly only temporarily, mayhap permanently.

De Lesseps.

Dr. O. W. Holmes.

Now then, a normal, healthy heart will contract and dilate, will pulsate, as we say, from sixty to eighty times every minute during your lives; but if the heart be healthy, you will be totally unconscious of this fact, you will have no more evident knowledge of the existence of your heart than you now have of the habitation of Mars. If, on the contrary, you become conscious that you have a heart, if you feel it beating or pulsating in the chest, then rest assured there is something wrong. I do not mean to say that you have heart disease, as the public understands it, and that you are in danger of sudden death; but that there is something wrong, as I have already said, either temporarily or permanently. If this evident action of the heart follows exercise, then you can depend upon it, infallibly, that you are exercising too much, that you have carried your exercise beyond the point of safety, and that, treading upon dangerous ground, you had better stop. I am enlarging so much upon this question of conscious heart action, because I firmly believe that, in attention thereto, is to be found the "safety-valve" of physical culture. The man who always desists the moment he commences to feel his heart beat, will be very unlikely to do himself harm by exercise, while the converse proposition is equally true. If all of my readers could but look into a human heart and see all the little delicate parts that go to make up this wonderful natural pump, they would not, for a moment, question the accuracy of my statements.



This diagram does not, of course, give, anatomically, a correct representation of the heart, but it serves to illustrate my purpose. The heart consists of four cavities, and the blood, in circulating through the heart and throughout the body at large, follows the course indicated in the larger diagram.

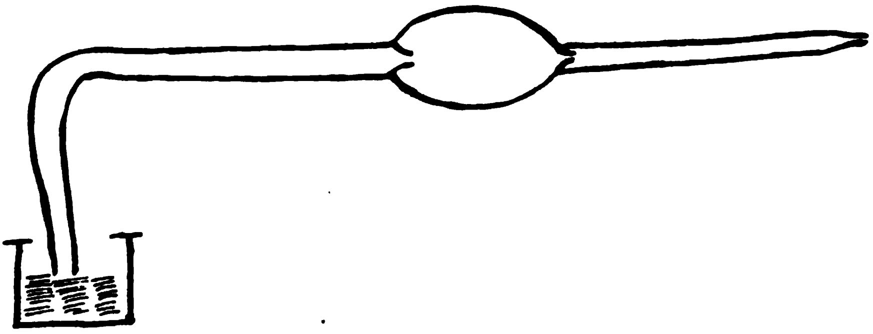
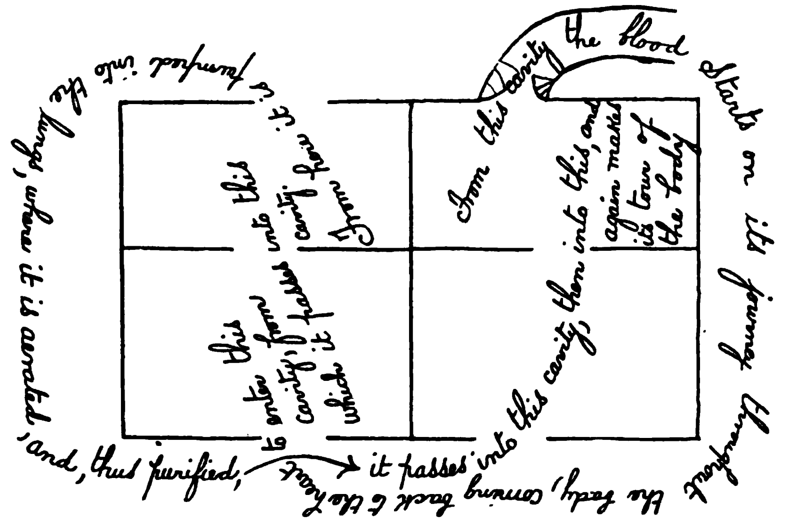


FIG. 5.

Illustration No. 1, of the smaller set, is intended to depict the main blood-vessel as it leaves the heart. Now, let us see what happens; this cavity of the heart contracts, and in doing so, forces its contents of blood up into the vessel above; but, now, in a second more, this cavity has dilated to receive the blood from the cavity below; why does not the column of blood in the vessel above flow back into the cavity when it dilates? Because the opening into the vessel is guarded by valves, which, when the cavity dilates, shut down, as shown in diagram No. 2, and so thoroughly close the aperture that not the smallest fraction of a drop of blood can pass through it. This idea can be well understood by looking at the rough diagram of a syringe (Fig. 5), in which we see, as it were, a bulb in the course of a tube, with a valve at either end of this bulb; when we press the bulb, the valve, nearest the pail of water closes, while the other opens and allows the air that was in the bulb to pass out of the nozzle of the syringe; when, now, we allow the bulb to expand, the valve towards the nozzle closes, that towards the pail opens, and the water rushes up the tube to fill the bulb, in accordance with the law of nature that abhors a vacuum. When we again press the bulb, the valve towards the pail closing, the water is

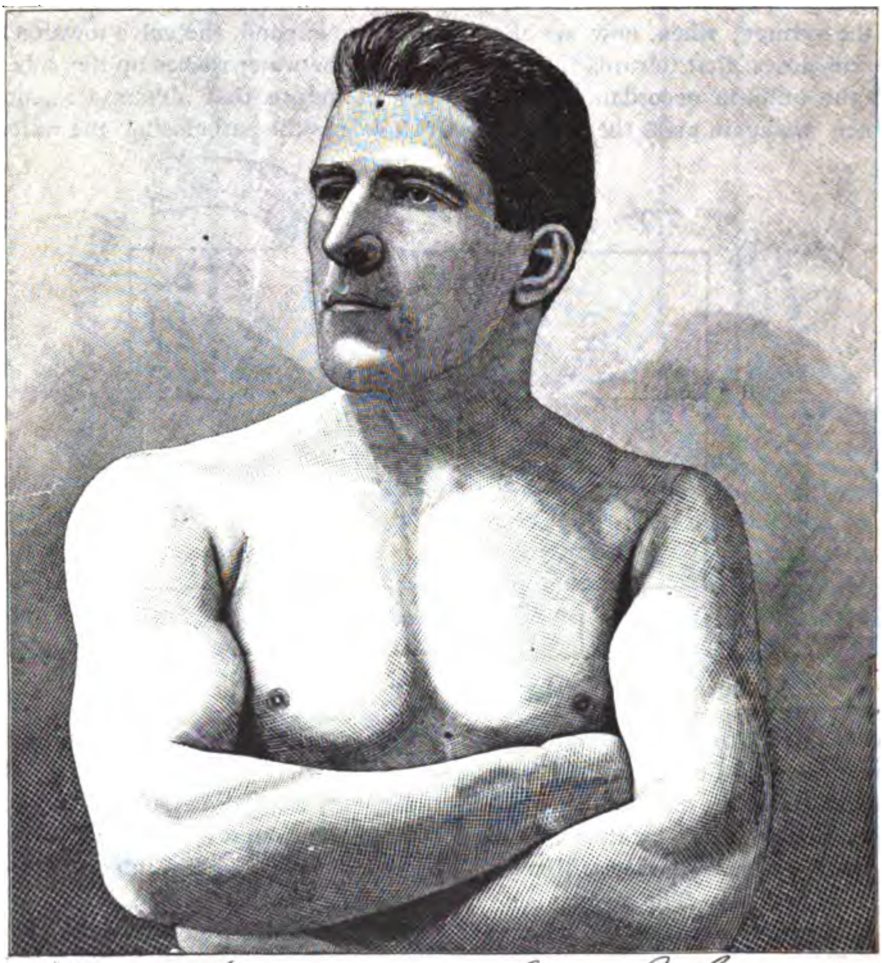

From this cavity the blood starts on its journey throughout the body, coming back to the heart it passes into this cavity, then into this, from this it is pumped into the lungs, where it is aerated, and, thus purified, it enters this cavity, from which it passes into this, and again makes its tour of the body

SHOWING THE COURSE OF THE CIRCULATION OF THE BLOOD.

forced out of the nozzle, and so on, by the alternate opening and closing of these valves, is the current of water continued in the same direction. But should the valve nearest the pail be inefficient, we will be just as likely to force the water backwards as forwards when we compress the bulb; in fact, more so, because gravity will favor a downward flow, and the integrity of our current is gone. The mechanism of the syringe and that of the heart is very similar, though that of the latter is more complicated and more delicate.

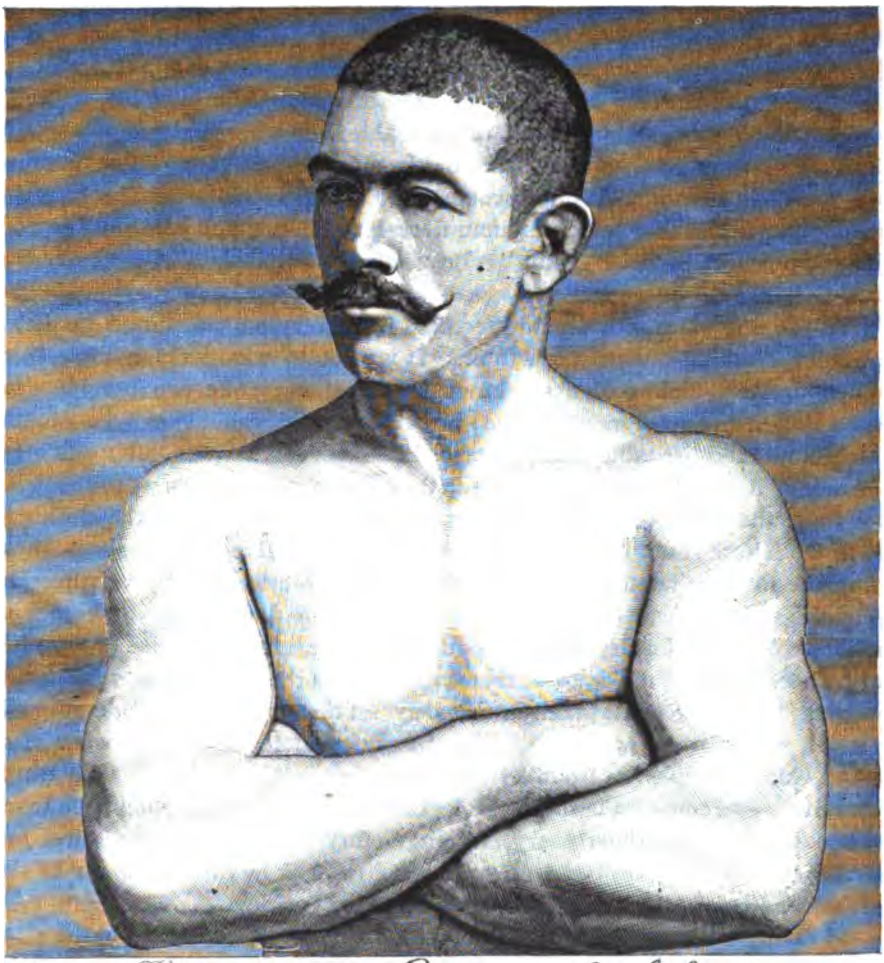
To go back to the heart; you understand, by reference to diagram No. 2, why the blood does not regurgitate; you see the valve accurately closing the aperture; but does it not occur to you to ask why the column of blood, pressing down upon the leaflets of this valve, does not force them into the cavity and allow the blood to regurgitate, just as it passed over them when forced out of the heart. Do you not see the little cords passing from the edges of the leaflets of the valves to the inside of the vessel or tube? These little cords furnish the answer to your question; they are just long enough to allow the valve to shut down, and short enough to hold it in position when it has occluded the opening.

But, suppose you have been exercising very violently, and the heart is beating tumultuously, it must be evident that just as the blood is pumped out with unwonted force, so must it recoil against these valves with an increased power, until, stretched beyond the power of resistance, one of these little cords suddenly snaps and we have the condition depicted in diagram No. 3; we have now the beginning of organic heart disease. The strain that was formerly resisted by three, must now be met by two cords, while the edge of one of the leaflets, unsupported by its cord, turns into the cavity at every recoil of the column of blood, and allows some little (possibly only half a drop at first), of the blood to regurgitate into this cavity every time it dilates. The valve is now imperfect; the integrity of the heart is gone, and, little by little, this imperfection becomes more marked until, after a while, we have the condition depicted in diagram No. 4. Those who have read Wilkie Collin's novel of



Yours Sincerely James J. Corbett
Champion of the World

"Man and Wife," will remember how the hero, Geoffrey Delamayn, a great athlete in his early days, is, when about forty, a guest at a country residence when some athletic sports are taking place. A running race is on the programme, and, at the last moment, one of the contestants fails to appear; Delamayn, the memories of his early victories rising before him, concludes, though advised by a physician present not to do so, to fill the place of the absent one. He starts to run and is rapidly out-distancing his competitor, when he is noticed to reel and totter, and fall heavily to the ground unconscious. He is picked up and subsequently pronounced, by his physician, a hopeless invalid for life. Those who have studied these diagrams will anticipate what had happened; Delamayne had ruptured one or more of these little cords. This is but one of the several risks of excessive muscular exertion, but space compels a postponement of a further discussion of the subject.



Yours Truly John L. Sullivan Ex-Champion of the World.

(TO BE CONTINUED.)

Suggestions for Winter.

BY DR. GEO. G. GROFF,

Of Lewisburg, Pa.
Member and Ex-President of the State Board of Health of Pennsylvania.

OWING to our variable climate, people ought to dress warmly. Most persons think that they do so, and yet, there is much sickness and many deaths every winter among people ordinarily well to do, simply because they are not dressed warm enough. The poor who have not the means, and children are excusable, but what shall we say of others who suffer for want of clothing. An old medical writer says, "The poor and fools suffer in winter." Young women and girls especially dislike to put on the amount of clothing which is often necessary for the well being of the body. They do not like to feel "stuffy." Boys, also, will often go without overcoats when they should be worn.

In the first place, our climate requires that every person should be dressed in woolen clothing during the winter. It is best to wear woolen undershirts, woolen drawers and woolen stockings. Almost everyone can become accustomed to wearing wool next to the skin. Fine wool can always be obtained which is no more irritable than cotton. If, however, the skin after a fair trial still rebels, it may be necessary to wear thin cotton garments next the skin, and over these the woolen garments. Attention should be given to the clothing of the feet. These should be always *warm* and *dry*. Good warm shoes should always be worn in winter. If a person is out in wet and sloppy weather, then overshoes should always be worn. If the feet become wet, shoes and stockings should be changed for dry ones as soon as possible. It is not wise to wear high warm shoes during the day, and then to exchange them in the evening for low slippers. Colds are often taken in this way. The warm socks, made of woolen material, which are now for sale, are to be preferred to slippers for wear in the house. Many people are troubled with cold feet in the winter. This trouble is generally overcome by bathing the feet in cold water very frequently. It may be necessary to bathe them every morning. Dry them on a coarse towel until they glow. Never go to bed with cold feet. It will be difficult to go to sleep in that condition. They will be best warmed by bathing.

If about to be exposed to unusual cold, as in driving, or riding in the cars in very cold weather, take the precaution to put on extra wraps. An extra coat, and then the heaviest overcoat, with a shawl and blankets to throw over the knees, should always be provided. When leaving home in winter, one never knows how cold it will be before he reaches home again. In cold weather don't stand in a cold wind or draught of air any length of time. Don't stand on the cold ground or on cold pavements without overshoes. At funerals, in winter, people ought not to stand about the grave with uncovered heads. Some ministers seem to desire other funerals at which to officiate, for they are thoughtlessly long in their services at the grave. When one has been working and has become heated, the body should be cooled off slowly. To do this an extra coat may be put on, or one may keep in motion until cooled off, but in no case should the person stand in a cold current of air, so as to become suddenly chilled. If the clothing in any way becomes wet, it should be exchanged for dry clothing at the earliest opportunity.

It is always to be remembered that the young, the aged, and the feeble, have less power of heat production than those in vigorous health. Hence, in cold weather, the hints above given apply especially to the cases named. It is said that in a very cold week in the city of London, the death rate is doubled, but the excess is almost altogether from the aged, the feeble, and the very young, who have not the power to maintain their bodily heat. Those poorly fed and poorly clad are almost always in health below par, and hence suffer severely in cold weather.

The cold season of the year is the time when we look for most of the contagious diseases to flourish, especially the contagious diseases of childhood. This is because the children are then kept within doors, they breathe impurer air than in summer, and, moreover, they then assemble in school, where they come into close contact with their playmates, and disease spreads from child to child. The same causes operate much in the same way among adults. It should be remembered by all that with care contagious diseases may be greatly restricted. If scarlet fever breaks out in a school, those children who are promptly removed and kept at home will not, in all probability, contract it. The whole secret in avoiding contagious diseases is to keep away from the producing causes. One will not contract small-pox if he keeps away from small-pox, and the same is true of all other diseases of the class. Funerals from all contagious diseases should be strictly private. Children should never attend these funerals under any circumstances. Patients convalescent from these diseases ought not to go from home until thoroughly well and after all their clothing has been disinfected. People should not visit in homes where these diseases have been until all danger is past.

It is not *necessary* for children to have measles, whooping-cough, diphtheria or scarlet fever. If we can keep them away from the diseases the time will come when they will not be so liable to them. Thus after sixteen or eighteen years they are no longer so susceptible as earlier in life, and as they grow stronger in body they are more able to resist the attacks of any disease. Hence, keep these diseases out of the family as long as possible. Again, after these diseases of childhood, the little patient is often left with a greatly weakened body, which will require a long time to restore to its usual condition of health. Such children should not be hurried off to school at the earliest possible moment after leaving their beds. It may often be best for them to remain out of school for a whole year to build up the body. The eyes are often left weak, and to use them in school means to injure them for life. Keep such a child from school and from books until the eyes are again strong. See that the children old enough to sit up with the family are not crowded back from the light where they cannot see to read or to work without injuring their eyes; but in no case permit children under fourteen years of age to sit up and study school tasks until ten o'clock or later. Strength of body for a child in a large measure depends upon the amount of sleep which it obtains. Children should spend a large portion of the long winter nights in sleep.

Before the weather becomes cold see that the cellar has a thorough cleaning. Remember if the cellar is dirty, the air in it will be dirty, and the air will not remain there but will be diffused all over the house to the damage of the inmates. The cellar should always have some means of ventilation, and probably the most convenient method is to have a flue open into the chimney. This will draw out a current of air constantly, which will be replaced by air entering through crevices. The cellar should not be used to store a miscellaneous collection of vegetables in. Potatoes and apples may be stored without harm, but cabbage, turnips, etc., had better be kept in some other place.

A means of maintaining good health in winter is by the free use of fresh fruits and green vegetables. There may not be very much nourishment in some fruits and vegetables, but there exists in them all, in small quantity, some of the rarer food elements necessary to maintain the body at its highest plane. It is the acids and the mineral salts in fruits which make them so valuable. As large variety of green vegetables and fruits should be used as can be secured. These things are cheaper and better than drugs for the maintenance of health.

The following additional hints may prove of value:

Breathe fresh air *every day*, no matter what is the state of the weather. This means that you should go out of doors every day when you are not sick.

Use the best possible artificial lights and do not overwork the eyes.

Let all the sunlight possible into your house. There are no flies to be afraid of in winter. Where light cannot enter the doctor will be a visitor.

Never lean the back against a cold wall or iron post. Keep the back well covered by heavy clothing. Do not allow a cold draught of air to fall upon the back.

Do not omit regular bathing. The body needs it in winter as in summer. Bathe in a warm room.

Take some exercise every day in the open air if this is possible. The rule should be for people in vigorous life to bring the body to the point of perspiring at least once every day. The aged and the feeble are not required to take so active exercise.

In the maintenance of health it is a matter of first importance that the excretory organs be kept freely open.

Food Acreage.

It is computed that twenty-two acres of land are needed to sustain a man on flesh meat, while the same amount of land under wheat feeds forty-two persons; under oats, eighty-eight persons; under potatoes, Indian corn and rice, 176 persons; and under the plantain, or bread-fruit tree, over 6,000 persons.

A Condensed History of Asiatic Cholera in Europe and America.[*]

VIEWING the extensive and steady spread of cholera on the continent, and of the great uneasiness manifested both in Europe and America as to its becoming, as in former years, a pan-epidemic, we give in this Bulletin memoranda connected with its past history. One broad fact appears in lucid brightness. The mystery that once enveloped the plague no longer exists. It need not get into the Union or into Tennessee. If from culpable oversight, carelessness or penuriousness it does get over the lines, it need not spread. Isolation, sanitation, disinfection, humane care are the safeguards. Money will secure all these. The public can well afford to furnish all that is wanted for this purpose, since the return is truly a hundredfold.

1629.—Bontius, a Dutch physician at Batavia, described the disease and first made it known to the medical profession in Europe.

1817.—It raged with great violence at Jessore, from whence it spread, not very swiftly, but with great certainty, in all directions.

1818.—By August it had reached Bombay. Thence it traveled through Arabia, Persia, Mesopotamia, Syria, etc., on its westward course, and, continuing to extend itself eastwardly from its place of origin, invaded the Burmese Empire, Siam, Java, China and other populous countries of that portion of the earth.

1823.—It appeared at Orenburg and Astrachan, on the eastern frontier of Russia.

1828.—Remained here until this year, when it increased in violence, attacking a tenth of the inhabitants of the province of Orenburg, proving fatal to a fourth of those affected.

1830.—Reappeared at Astrachan. In less than a month 4,000 persons died of it in that city, and over 21,000 in the province.

1831, June 26.—Appeared at St. Petersburg, having ascended the Volga and destroyed thousands in Moscow. From Astrachan it also diverged along the northern coast of the Black Sea, and thence spread into Austria, Poland, Prussia and Northern Germany.

1831.—In August it was conveyed to Cairo by a caravan from Mecca. Over 15'000 died of it.

1831, October 26.—It appeared for the first time in England at Sunderland, from whence it spread slowly through the northern part of England and into Scotland.

1832, February 14.—It broke out in London.

1832, June 8.—The cholera broke out at Quebec, its first appearance in America. Two days afterward it was in Montreal.

1832, June 24.—New York was attacked. From thence it spread to Albany, Philadelphia, Cincinnati, New Orleans, etc. In New York it reached its height on the 21st of July.

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[*] From the Tennessee State Board of Health Bulletin.

1836.—It lingered in the United States for four years, and then entirely ceased. This first epidemic of cholera cost Great Britain and Ireland 40,000 lives out of 116,000 persons attacked. In the cities of Quebec, Montreal, New York and Philadelphia, embracing then about 450,000 inhabitants, there were over 18,000 cases and 8,000 deaths. In India it remained endemic. Other Asiatic countries also suffered severely.

1846.—It appeared at Kurrachee early this year, near the mouth of the Indus, with terrific violence. Thence to Teheran, capital of Persia. Here its severity was such that 300 perished daily for several weeks in a population of not more than 60,000.

1847 and 1848.—Cholera ravaged parts of Russia and Turkey, having entered Europe by almost the identical route as before. It traveled, however, with much greater rapidity.

1848.—In the autumn it appeared in France and Great Britain, revisiting during the next eight months with almost unerring certainty every place in which it had appeared in 1832–33, and seeking out the same filthy lanes and undrained sections of the cities where it had then committed its greatest ravages. It was even more malignant than in its previous visit. In England and Wales it carried off 53,293 persons.

1848, December 4.—The ship New York, from Havre, arrived at Staten Island with cholera among her passengers.

1849.—It occurred in New York. The whole number of cases reported outside the hospitals in fifty-two days were 2,631, of which 915 died. Also in New Orleans, and spread over the greater part of the Eastern and Western States.

1850.—In New Orleans deaths from cholera May to December, inclusive, 824. Cases occurred as late as February 15, 1851.

1850.—At Cincinnati, from June 1 to August 15, 1,400 deaths from cholera. At Columbus, Ohio, from July 24 to August 25, 195 deaths from cholera—a great mortality for the population.

1851.—A second visitation at Cincinnati. Some 200 deaths, mainly in July.

1851.—From April to August, inclusive, 766 deaths from cholera in St. Louis. Total for the year, 847.

1852, May, June and July.—Numerous cases in Cincinnati.

1852.—Total deaths in St. Louis for the year, 789, of which 508 in June and July.

1854.—Cholera as virulent in St. Louis as it was in 1849. Total deaths, 1,534, mainly in May, June, July and August.

1855.—Disappeared from the United States.

1853, 1854.—Prevailed in Great Britain.

1855, 1856.—The allied armies in the Crimea suffered intensely.

1865–1874.—Cholera persisted in Europe about ten years.

1865.—In the beginning of May it broke out with terrible fury among the pilgrims at Mecca. On the 10th or 11th of May the first death occurred at

Alexandria. In June it had reached Cairo. On the 3d of July at Constantinople, where it produced a terrible panic. From Alexandria a steamer conveyed it to Marseilles. From thence travelers carried it to Paris.

1865, September.—Several cases at Southampton, England. Did not spread.

1865, November 3.—Steamship Atalanta came into the lower bay of New York with 400 German immigrants, and cholera. Precautions taken; no spread.

1866, July 7.—At Ancona in Italy from Alexandria.

1865.—Great epidemic at Valencia, in Spain. Thirty-one out of forty-nine provinces in Spain were ravaged from July till the close of the year. It extended also into Portugal.

1866.—Cholera was early reproduced in almost all the localities it had visited in 1865. It extended northward as far as St. Petersburgh. It appeared in several localities in Bavaria, Saxony and Prussia, also in Belgium and Holland. It still existed in Paris and extended to the northwest of France.

1866.—An epidemic in Liverpool, from July 22 to the end of November, carried off 1,792 victims. In London, for the four weeks ending August 4, the deaths were 65,481, 1,097, 1,178. More or less diffused over England during the summer.

1866.—It broke out in New York about the beginning of May, and gradually spread over the country, following the lines of travel. Prevailed extensively in the United States army, causing over 1,200 deaths among officers and men. During summer and fall prevailed extensively at New Orleans. Prevailed at St. Louis also.

1867.—A general abatement in Europe. Prevalent in South America. Buenos Ayres suffered greatly.

1867.—At New Orleans reappeared in June; 571 deaths the following six months. Again at St. Louis during summer and fall.

1868.—Completely died out in Europe.

1869.—By its old route it reached Nijni Novgorod, and broke out in September.

1870.—A vast outburst of cholera. In Russia, 9,386 deaths.

1871.—In Russia, 124,834 deaths.

1872.—In Russia, 113,196 deaths.

1873.—In Russia, 4,395 deaths.

1872.—Very widely diffused over Europe. Imported into England on several occasions. Its spread stopped by the local sanitary authorities.

1873.—Began to subside in Europe.

1872, December, and 1873, January.—There arrived at New Orleans a total of nearly 2,000 immigrants from cholera infected districts of Europe.

1873, February 9.—First death at New Orleans. Two hundred and fifty-nine fatal cases occurred during the epidemic.

1873, April 8.—First case, fatal, at Vicksburg.

1873, June 30.—First case, fatal, at Little Rock. Four importations; no spread owing to the energy and efficiency of the medical men in whose care the initial cases occurred.

1873, April 15.—First case, fatal, at Memphis.

1873, May 54.—First case, fatal, at Chicago. Total number of deaths from cholera and cholera morbus, May and September, 116. Many towns and villages suffered greatly.

1873.—First case at St. Louis, died 11th of May. A mild epidemic followed. Other localities visited.

1873.—First case at Paducah, died May 21. Very widely diffused throughout Kentucky.

1863, June 15.—First death reported at Cincinnati. Two hundred and seven deaths during the summer. Other cities and towns in Ohio visited.

1873, June 6.—First death at Evansville. Other localities in Indiana visited.

1873.—During June and July sixty-two deaths at Huntsville, Ala. Birmingham, with about 3,000 inhabitants, was terribly scourged during June and July.

1873, June 15.—First case, fatal, at Wheeling.

1873.—But two authenticated cases of cholera occurred in the State of Georgia. Both were residents of and refugees from Chattanooga. One died at Atlanta, population 22,000, on July 2. The other at Dalton, population 5,000, on July 3. Both instances terminated fatally in communities in which the auxiliaries to the rapid development of a cholera epidemic were present, the specific causes once having been imported; yet in both instances, by the prompt and energetic action of the medical men having the case in charge, the power of the disease was confined to the infected individual, and the health of the residents of the respective houses and of each community were efficiently guarded.

1873.—During this year 200 cities and towns in the Mississippi Valley were more or less afflicted.*

1882.—Made its appearance in Egypt, where in three or four months it occasioned a mortality of 30,000 to 50,000 of the inhabitants.

1884.—On June 13 or 14 it invaded the French military post, Toulon. Then the cities of Toulon and Marseilles, and spread through the south and southeast of France, and partly in central and western France.

1885.—At Marseilles and in Bretagne.

1884.—About August, in Spain.

1885.—Invaded almost the whole of Spain.

1884.—Brought into Italy.

1885.—Great ravages at Palermo, Sicily.

1885–6 —At Venice.

1886.—From April during the rest of the year it ravaged the peninsula of Italy.

1886.—At Trieste, and also the Austro-Hungarian shores of the Adriatic.

1887.—Again in Sicily and in Italy.

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* See *Public Health*, Vol. I, pp. 224-252.

1884–1887.—The epidemic of cholera in Europe cost France 15,000 inhabitants in 1884, 1885 and 1886; Spain, 180,000 inhabitants in 1884 and 1885; Austro-Hungary, 4,000 inhabitants in 1886; Italy, about 50,000 inhabitants in 1884, 1885, 1886 and 1887; Malta, 500 inhabitants in 1887; a sum approximately of 250,000 inhabitants of Europe. In other words, the epidemic has removed from France about one inhabitant for every 3,000, from Italy one inhabitant for 550 or 600, from Spain one inhabitant for every 100, from Austro-Hungary one inhabitant for every 9,000. An approximate calculation of these losses estimated from the purely material point of view, shows a sum total of about $80,000,000 of value destroyed. A still greater loss, resulting from the damages caused by the disease through idleness, interference with commerce and navigation, interruption of business, etc., would increase the sum total of the losses occasioned by the cholera to about $200,000,000 in three or four years.*

1886.—Cholera introduced into Buenos Ayres, Argentine Republic, in November, by the ship Perseo, plying between that city and Genoa. A conspicuous instance of official pride and stupidity. An extensive epidemic developed, and the disease spread through the inland provinces. The city was cut out entirely from the commercial world; Uruguay, Brazil, Paraguay, and most of the European ports quarantined against it.

1887, January 19.—Cholera officially declared at Montevideo, Argentine Republic, after many denials of its existence.

1887, January 2.—Cholera at San Felipe, a town situated near the base of the Andes, forty miles north of Santiago. The latter city severely scourged. Commerce of Chili interrupted, with heavy losses.

1887, September 23.—The steamship Alesia arrived at New York from Marseilles with cholera on board. At Naples some 600 immigrants from the cholera districts of Italy and Sicily were taken aboard. Proper precautions used by the quarantine officials and the disease not allowed to spread. Much credit claimed, and justly, considering their limited means.

However, the case of the Italian steamer Independente, which arrived in New York in October with a large number of immigrants, and not showing cholera on board, was allowed to discharge her passengers, after a few hours of detention, necessary for a thorough inspection, shows the insufficiency of the New York safeguard. The next day numerous squads of these immigrants, with their baggage, departed for at least twelve great cities, in widely distant parts of the country.

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* See report of E. O. Shakespeare, M. D., U. S. Commissioner.

Where the Shoe Pinches.*

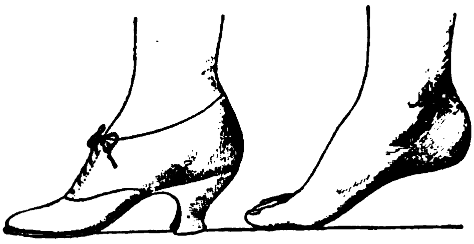
BY ALVARD J. MOORE.

THE foot is the hardest-worked member of the body, and, as a rule, receives the least thought or care. Let the hand be injured, be the injury ever so slight, remedies are at once adopted that will effect a cure, and the injured member is relieved from work that the cure may be the more speedy.

No sensible person thinks of performing labor with a hand on which a felon is forming at one of the joints, but no one thinks of giving the foot a rest the moment he or she discovers a bunion forming at the great toe joint. Yet a bunion is to the foot what a felon is to the hand, and why not give both members the same judicious treatment?

Next to his generals, Napoleon Bonaparte relied upon his army shoemakers to win his battles. He realized that his soldiers, to be in good fighting trim, should be comfortably and well shod and, therefore, he enlisted into the service the most skilled shoemakers in the empire. It is related of him that on one occasion he vetoed every item on a requisition for supplies except those for the battalion's shoemakers.

The labor that the foot is called upon to perform during the day is most surprising. With every step it has to support the entire weight of the body, and, as a consequence, is subjected to a pressure of one to two hundred pounds hundreds of times a day, according to the weight and activity of the person.



POSITION OF FOOT IN A HIGH-HEELED SHOE.

The wear of the tissues of the foot is great, and were it not that they are being constantly repaired the average foot would wear no longer than the average shoe. If we clothe the foot properly it remains in a healthy condition. The clothing of other portions of the body is usually of such material as to admit of the free escape of all moisture. Not so with the foot. Usually it is encased in a tight-fitting calf or kid shoe at least fourteen hours out of twenty-four. Thus it is held a close prisoner, excluded from free access to fresh air. If such a manner of clothing the feet is persisted in, it is only a question of time when the foot becomes unduly sensitive and tender and susceptible to disease.

When the foot is brought to this condition it seems to affect the whole of the nervous temperament of the person. He is disposed to be irritable in temper and is not in a mental condition to calmly and deliberately dispose of social or business problems. Thus, a tender foot is often responsible for a ruffled temper.

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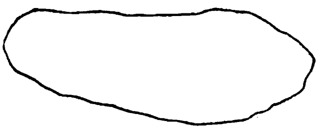
* Abstracted from *The Cosmopolitan* for September.

When the shoe is new it absorbs the perspiration from the foot quite readily, but it soon reaches the limit of its capacity in this respect and thenceforth only acts as a stimulant in promoting unhealthy perspiring.

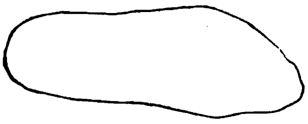
To illustrate this, press the hand against a piece of marble or other non-absorbent substance and it has to be held in this position but a short time when it will be found, upon removing it, that a sufficient amount of moisture has gathered between the flesh and the marble to leave the imprint of the hand. The sole of the foot is brought against the hard inner sole of the shoe, at a pressure equal to the weight of the body, many times a day, but in this instance there are not the favorable circumstances which attended the pressure of the hand against the marble, where the hand was surrounded with fresh air. On the contrary, the foot is in a heated condition and the surrounding circumstances are such as to favor perspiration. Although the person may not notice it, the degree of heat and amount of moisture generated from the foot are sufficient in a short time to burn the inner sole to such an extent as to cause it to crack, as though baked before a fire. This will be seen by examining the inner sole of almost any shoe that has been continuously worn for a few months.

No shoe should be worn more than two consecutive days and then allowed at least two or three days to dry out and air. This would necessitate a a person having several pairs of shoes on hand. If so situated pecuniarily that this cannot be afforded, the next best thing is to wear a shoe large enough to allow the slipping in of an inner sole, of which several pairs should be on hand and used alternately.

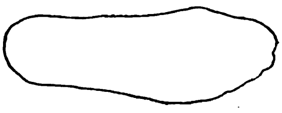
The toes play a very important part in pedal locomotion, the great toe, as may be supposed, playing the "leading part," while the smaller toes act as supports. In the healthy, well-formed foot the great toe lies flat along the ground, pointing straight to the front. In every instance its position in relation to other parts of the foot should be such that



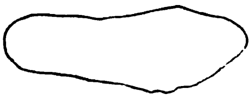
SENATOR STEWART, OF NEVADA.



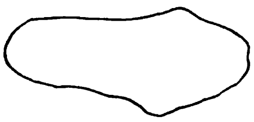
P. S. GILMORE, BANDMASTER.



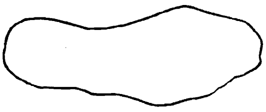
MRS. LANGTRY, ACTRESS.



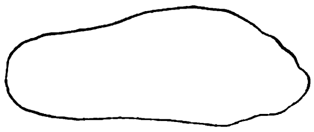
MAGGIE MITCHELL, ACTRESS.



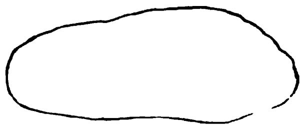
A SOCIETY GIRL'S.



AMELIA GLOVER, DANCER.



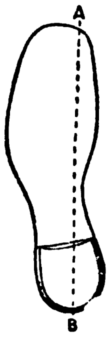
G. LITTLEWOOD, PEDESTRIAN.



D. J. HEITZ, PEDESTRIAN.

when a line is drawn parallel with the bones of the great toe it should pass out at the centre of the heel. This line is known as the tread line.

The smaller toes should lie close together, slanting downwards in graceful curves; while the longest, or second toe, is slightly separated from its neighbor, the great toe.



CORRECT POSITION OF TREAD LINE.

While the great toe is called upon to perform its chief duty in walking and running, the smaller toes are by no means without their uses. In standing they rest upon the ground and give lateral support to the foot, and in walking they are bent in a peculiar manner and press firmly against the ground.

Such are the respective duties of the toes, but, evidently, the Creator gave no thought to narrow-toed shoes, for in them the toes are piled and heaped as though each was trying to avoid being the "under dog" in the struggle, and they point in as many directions as there are toes. In a narrow-toed shoe the great toe is thrown to one side and is out of gear, as it were, where its natural motion is upward and downward and not sideways.

It is related of General Grant that while making his tour round the world he met a noted English divine. The clergyman was afterward asked what he thought of General Grant. "Why," he replied, "there is a great deal of genius in the toes of his boots." The square-toed shoes which General Grant wore to avoid corns had evidently attracted the attention of the eminent divine.

Alluding to his square-toed shoes, General Grant once said: "I cannot afford to cripple myself." Few people give this matter thought, but follow the dictates of fashion rather than the admonitions of reason.

There should be no such thing as breaking-in a new shoe. While the foot is "breaking" the shoe into shape the three smaller toes are being crowded against the shoe upper, and long before the breaking-in process is completed, corns have taken deep root on at least two of the toes, and, possibly, on the third.

The History and Historical Sketch of Modern Cremation in England.*

BY SIR HENRY THOMPSON,
Of London, England.

CREMATION in England during the last seventeen years, reckoning from the commencement of 1874, will be incomplete without an allusion to what the modern reaction in favor of cremation had achieved on the continent shortly before the date named. The proposal to adopt it in recent times originally proceeded mainly from Italy. Papers and monographs appeared commending the method as early as 1866, but practical experimenters, Gorini and Polli, published separately the results of their experiments in 1872; and among others Professor Brunetti, of Padua, in 1873 detailed his experience, exhibiting the results of it in the form of ashes, etc., with a model of his furnace, at the Great Exhibition at Vienna of that year.

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* From *The Casket*.

I first became practically acquainted with the subject on seeing his collection there, and studied it with great interest. I had long believed that cremation was in theory the quickest and safest mode of reducing the dead body to its original elements—the end attained slowly and not without danger to the living by burial in earth. But I now satisfied myself for the first time that, if not by this apparatus, yet by some other, complete and inoffensive combustion of the body might almost certainly be effected without difficulty. Brunetti's first cremation took place in 1869, his second and third in 1870, and were performed in an open furnace out of doors. The results were effectively displayed and illustrated by written descriptions, plans and drawings.

In no other European country had any act of human cremation taken place, as far as I can learn, prior to 1874; and very little notice or information respecting it appeared in any literary form. Dr. De Pietra Santa, the well-known sanitary authority of Paris, reported the Italian cases in a little brochure on the subject in 1873, according his hearty support to the practice. But in the autumn of 1874 there appears to have been a solitary example at Breslau; while another occurred almost immediately afterwards at Dresden, where an English lady was cremated in a Siemens' apparatus by the agency of gas. No repetition of the process has taken place there since.

Being thoroughly convinced of the value of the method as a sanitary reform, at once pressing and important, I ventured to bring the subject before the English public for the first time by writing an article which appeared in the *Contemporary Review* in January, 1874, entitled "Cremation: the Treatment of the Body after Death." And I advocated the plan there set forth, based on the Italian trials referred to, and further illustrated by several experimental cremations made by myself in powerful furnaces, on animals, both in London and Birmingham, at the same date. On the results thus obtained I felt justified in asserting the superiority of a complete cremation, at all events, to any method by burial in the soil. The reason assigned for taking this step was my belief, supported by a striking array of facts, that cremation was becoming a necessary sanitary precaution against the propagation of disease among a population rapidly increasing, and daily growing larger in relation to the area it occupies.

The degree of attention which this proposal aroused was remarkable, not only here but abroad, the paper being translated into several European languages. In the course of the first six months of that year I received eight hundred letters on the subject, from persons mostly unknown to me, requiring objections to be answered, explanations to be given, supposed consequences to be provided for; some, indeed, accompanied with much criticism on the "pagan" or "anti-Christian" tendency of the plan. I was encouraged, however, to find a considerable number were more or less friendly to the proposal. But I confess I had been scarcely prepared to expect that people in general would be so much startled by it as if it were a novelty hitherto unheard of. Long familiar with it in thought myself, cherishing a natural preference for the manifest advantages it offers, on sanitary grounds, to burial, and, after thoughtful comparison, on all considerations governed by feeling or sentiment, the opposition manifested appeared to me curiously out of proportion with the importance of certain interests or predilections I had perhaps underestimated. Even the few who approved yielded for the most part a weak assent to the confident assertion of a host of opponents, that whatever might be the fate of the theory, any realization of it could never at all events occur in our time. To use a phrase invented since that date, the proposal was not regarded as coming within the range of a practical policy. At some future day, when the world's population had largely increased, we might possibly be driven to such a process, but, thank heaven! the good old-fashioned resting-place in the churchyard or cemetery would amply suffice to meet all demands for several future generations still.

To some of the natural and practical objections, especially those which had been urged by men of experience, weight and position, entitled to be listened to with respect and attention, I endeavored to reply in a subsequent article which appeared two months later in the same journal.

Meantime, during January and March, 1874, a few persons interested in the subject met at my house and agreed to form a society for the purpose of advocating cremation. The declaration now used was there drawn up on the 13th of January and signed by them. The first to do so were Shirley Brooks, William Eassie, Ernest Hart, the Rev. H. R. Haweis, G. H. Hawkins, John Cordy Jeaffreson, F. Lehmann, C. F. Lord, W. Shaen, A. Strahan, Henry Thompson, Major Vaughan, Rev. C. Voysey, T. Spencer Wells and Mrs. Crawshay, and these subsequently formed the committee.

The society was "formally constituted at a meeting on April 29, after which a provisional committee was at once formed, Sir H. Thompson elected president and to act as its chairman," the annual subscription fixed at a guinea, Mr. Eassie appointed secretary, and acting thus for the first time at this meeting. He had previously assisted me in dealing with most of the voluminous correspondence referred to, and, as a sanitary engineer, took much interest in our proceedings. Four of the above-named gentlemen have since died; the others, with three exceptions, still remain on the council of the society. Such was the origin of "The Cremation Society of England." It was organized expressly for the purpose of disseminating information on the subject and of adopting the best method of performing the process as soon as this could be determined, provided that the act was not contrary to law. In this society I have had the honor of holding the office of president from the commencement to the present date, endeavoring thus to serve a most able and efficient council, most of whom have been fellow workers during the same period. I am thus well acquainted with its labors and their results, and with each step in its history.

The membership of the society was constituted by subscription to the following declaration, carefully drawn so as to ensure approval of a principle, rather than adhesion to any specific practice:

"We disapprove the present custom of burying the dead, and desire to substitute some mode which shall rapidly resolve the body into its component elements by a process which cannot offend the living, and shall render the remains absolutely innocuous. Until some better method is devised, we desire to adopt that usually known as cremation."

And the conditions of membership are:

I.—Adhesion by signature to the above declaration.

II.—The payment of an annual subscription of one guinea or a single payment of ten guineas, which latter confers the right to cremation at death, without fee, if a written notice is signed by the subscriber and deposited with the society when the subscription is made.

The council of the society commenced operations by submitting a case to legal authorities of high standing, and received two opinions, maintaining that cremation of the human body was not an illegal act, provided no nuisance of any kind was occasioned thereby. Thus advised, an arrangement was soon after concluded with the directors of one of the great cemeteries north of London to erect on their property a building in which cremation should be effectively performed. This site, so appropriate for its purpose, and so well placed in relation to neighboring property, etc., would have been at once occupied had not the then Bishop of Rochester, within whose jurisdiction the cemetery lay, exercised his authority by absolutely prohibiting the proposed addition.

It was necessary, therefore, to find an independent site, and the council naturally sought it at Woking, since railrway facilities for the removal of the dead from the metropolitan district already existed in connection with the well-known cemetery there. Accordingly, in the year 1878, an acre of freehold land in a secluded situation was purchased, with the view of placing thereupon a furnace and apparatus of the most approved kind for effecting the purpose.

After much consideration it was decided to adopt the apparatus designed by Professor Gorini, of Lodi, Italy; and that gentleman accepted an invitation to visit this country for the express purpose of superintending the erection of it, and the plan was successfully carried out in 1879 by the late Mr. Eassie, already named as our honorary secretary.

When the apparatus was finished, it was tested by Gorini himself, who reduced to ashes the body of a horse, in presence of several members of the council, with a rapidity and completeness which more than fulfilled their expectations. This experiment foreshadowed the result which numerous actual cremations have since realized, namely, that by this process complete combustion of an adult human body is effected in from one to two hours, and is so perfectly accomplished that no smoke or effluvia escapes from the chimney; every portion of organic matter being reduced to harmless gases and a pure white, dry ash, which is absolutely free from disagreeable character of any kind. Indeed, regarded as an organic chemical product, it must be considered as attractive in appearance rather than the contrary. The process, of course, is considerably lengthened if the body is enclosed in a thick shell or coffin, which has to be burned also.

During the year 1879 the society met with strong opposition from the Home Office, and were involved in a long correspondence, not of sufficient interest to be presented here either wholly or in part. But it was the occasion of much labor and anxiety to the working members of the council, and of disappointment to their hopes: demanding, moreover, on the score of prudence, a patient and quiescent policy on the part of the council, and delaying the use of the building for a few years.

Nevertheless there was no reason why public attention to the proposed method should not be invited by other means. My friend, Sir Spencer Wells, one of the most active members of the council, brought the subject prominently before the medical profession at the annual meeting of the British Medical Association at Cambridge in August, 1880, and, after a forcible statement of facts and arguments, proposed to forward an address to the Secretary of State, asking permission to use the crematory under strict regulations. This was largely signed and duly transmitted, achieving, however, no immediate result. But in various quarters, and at different times during this period, advocacy by means of essays, articles in journals, lectures, etc., had arisen spontaneously, no organization having been set on foot for the purpose; several members of the council, however, taking part in some of these proceedings.

Meantime the work of cremation abroad may be again referred to. The first cremation of a human body in a closed receptacle, with the object of carrying off or destroying offensive products, with the exception of the Dresden example referred to, took place at Milan in January, 1876, and was followed by another in April, the agent adopted being gas. The next occurring there in March, 1877, was accomplished in like manner, but by employing ordinary fuel. It was in Milan also, in September following, that the first cremation was performed by the improved furnace of Gorini already mentioned. In the preceding year, 1876, the Cremation Society of Milan had been established, under the presidency of Dr. Pini, and it soon became popular and influential. During the year a handsome building was erected with the view of using gas as the agent; but it was subsequently enlarged, namely in 1880, to make room for two Gorini furnaces. These were soon in operation, and since that date many bodies have been burned every year, the number up to the 31st of December, 1886, being 463.

Similar building on a smaller scale have been constructed and largely employed elsewhere; for example, at Lodi, Cremona, Brescia, Padua, Varese, and more lately at Rome in the Campo Varano cemetery. This was first used in April, 1883, since which date 123 cremations have been performed there up to the 31st of December, 1886. The number of all cremations occurring in other towns, excluding Milan and Rome, up to the same date, is 202, making 788 for Italy alone.

In Germany, the only place at which the practice has been regularly followed is Gotha. A building was constructed there, under permission of the government, the first cremation taking place in January, 1879. It has been largely employed since, the number of cremations amounting to 473 up to the 31st of October, 1887. Cremation societies, some of them with numerous members and displaying much activity, have been recently established in other countries; in Denmark (where the first cremation in a Gorini apparatus took place in September, 1886), in Belgium, Switzerland, Holland, Sweden and Norway, and in various parts of the United States, where also cremation has been employed on many occasions. In the city of Buffalo a well-organized crematory has been established in the most beautiful part of the suburbs. Both externally and internally its arrangements are planned and executed in good taste, and its furnace is one of the most efficient kind. The system is growing in favor, and is more frequently adopted in each successive year.

In Australia the Hon. J. M. Creed, a well-known physician in Sydney, has warmly advocated the practice, which has numerous supporters there. He moved the second reading of a bill to establish and regulate cremation, in the House of Assembly, June, 1886, in an able speech, pointing out the dangerous proximity of neighboring cemeteries to their rapidly developing city, and giving instances in which great risk had been already incurred. He cited in illustration the occurrence of pestilence thus produced among the rapidly growing population in the suburbs of New York and other American cities. The act was approved by the Legislative Council, but failed to pass in the House of Assembly.

In Paris projects for performing cremation were discussed for some years before one was adopted. At length, about four years ago, a crematory of considerable size was constructed under the direction of the municipal council, in the well known cemetery of Pere la Chaise. The entrance of the building leads into a spacious hall, sufficing for the purposes of a chapel. In the side wall opposite the entrance are three openings, each conducting to an apparatus constructed on the Gorini principle. It was first employed, by way of testing its powers, on the 22d of October, 1887, for the bodies of two men who died of small pox. The result was very satisfactory, but as the demand for cremation soon became large, a new furnace was constructed and is now used in preference to those previously made. I had an opportunity of examining it, and of seeing several cremations performed there in April last. The interior of a chamber is kept constantly at a bright red heat, by burning coke in a closed reservoir outside, the product of which chiefly, carbonic oxide, pass through in a state of combustion and rapidly consume the body. This is now being superseded by a chamber containing hot air only, supplied by a furnace working on the regeneratory principle, which acts still more rapidly than the preceding. At the date of my visit the cremations in Paris were taking place at the rate of about three or four hundred a month, and were increasing in number monthly. A total of more than three thousand had then been reached.

(TO BE CONTINUED.)

The Sacramental Cup.

BY A. VAN DERWERKEN,
Of Brooklyn, N. Y.

A CUSTOM of the Protestant Church has been urged upon the writer's attention as needing and demanding a reform. We refer to the practice of using only one, two or three cups, as the case may be, in the ceremony of the Lord's Supper.

The writer will not be understood as attacking the sacrament itself, for it is with the most profound reverence that we bow to this divine and holy institution, as ordained by our Saviour, in commemoration of His death. It is simply the manner of observing the ordinance that we criticize.

Our reasons for objecting to the use of but one or two cups are four:

(1) The custom is unclean.

(2) There is a possibility of its spreading disease.

(3) It is inconvenient and awkward.

(4) We are not aware that there is any sanction in the mode of authority of Christ.

Our first point is, the custom of using only one or two cups is unclean.

In most, if not all the Protestant churches, the wine is poured into the few receptacles indicated, and these are passed around to the communicants, who drink the wine while either remaining in their seats, or kneeling at the altar. The clergyman being the first to partake of it, when the cup is perfectly clean, can have no hesitancy in conforming to the custom, but by the time each vessel has touched the lips of two or three hundred persons, as the case may be, our readers may imagine the condition of the wine offered to the last communicants.

Think for a moment of the many through whose decayed and neglected teeth the consecrated symbol has been poured. Consider, if you will, the number of those who chew tobacco, and whose mustaches are inevitably besmeared with the juice of this filthy article, and then dipped into the contents of the sacred cup; then you have those whose breath is tainted by a disordered stomach, or catarrhal affection, and those too who suffer from diseased lungs, the breath of each being exhaled into the cup and absorbed by the wine, from all of which there is the dribbling back of mingled saliva and wine, and then decide whether we are not correct in speaking of the practice that now obtains in our churches as unclean.

Our readers will pardon our use of plain language, as the subject seems to justify it.

Our second ground of objection is, that the custom under discussion may possibly spread disease.

It is not merely the things we have enumerated that may taint the wine with fatal germs, there are sore lips and ulcerated mouths that increase the liability to contagion. Indeed, there may be among those who participate in the service persons unconsciously suffering from the incipient forms of diphtheria, who innocently contaminate the wine, and subject all who afterward drink of it to the danger of being infected by the disorder. A distinguished physician of this city informed the writer that not many years since a child, who had what was considered a common sore throat, but which proved to be diphtheria, was kissed by three different persons, and that each one of them contracted the distemper and died. He expressed the opinion that the deadly germs could as readily impregnate the wine in the chalice, as they could be conveyed to the circulation of those persons who received the fatal kiss.

The third objection is that the usage we wish to do away with is inconvenient and awkward.

The cup used cannot be easily grasped by ladies with their hands encased in tight fitting gloves, nor by children with their smaller hands. Some of the vessels are so large it is necessary to employ both hands in order to hold them safely, and in transferring the sacred vessel from one person to another, by those who are seated in the pews, especially when handled by children, there is the risk of dropping it, or causing the contents to spill over upon the dress of others.

Some of the communion cups are very old and odd shaped, being regular tankards, minus the cover, and they are exceedingly clumsy to handle. The writer once witnessed an accident such as he has suggested. A lady was about to place the cup to her lips, when the person sitting next to her unintentionally struck her arm, causing a quantity of the wine to spill from the cup down the front of the lady's dress and into her lap, producing a commotion and disturbing the solemnity of the occasion. We admit such accidents are not frequent, but there is a possibility of their happening at any time.

Our fourth and last point is, there is no positive proof that our Lord and the twelve disciples all drank out of one cup.

Our Saviour and the disciples were in the midst of a feast, and at that time wine was used generally as it is yet to-day, and when the meal was prepared and table spread, it is more than likely that a cup was placed for each guest. They had been drinking wine with the bitter herbs and paschal lamb before Christ blessed the wine specially, and said to those with Him, "drink ye all of it." It is fair to suppose that our Lord blessed the wine in bulk, and then the individual cups were filled from the larger cup or vessel in which the wine had been blessed. It is not probable that there was but one vessel for thirteen persons to drink from, and it it is contended that such was the case, and this custom was to be strictly adhered to by generations yet to appear, how comes it that our churches do not follow the usage, for they employ two, three or more cups? If they can use two or more it is just as proper to multiply the number and have a cup for each communicant.

It has been said that "cleanliness is next to godliness," and we firmly believe in the doctrine, and with the most profound reverence we venture the assertion, that if our Lord were a dweller upon this earth to-day, He would enter a solemn protest against the present manner of serving the wine in celebrating the Eucharist.

Personally we never place the communion cup to our lips without a shudder, and have, on more than one occasion, abstained from going to church on the Sabbath when the sacrament was to be administered, for the reasons implied in the preceding discussion. This may be wrong, and it may not be, but human nature is human nature, and our objection so well founded it is difficult to overcome.

Even in our own households, with our own flesh and blood, we are very particular about having our individual glass or cup at the table, and how a sensitive person, with cleanly instincts and habits, can take the wine from a cup that has been used by hundreds of persons, without a feeling of repugnance, and a protest from all his finely organized and delicate sensibilities, is more than we can comprehend. And we believe the time has come when there should be a vehement protest against the present manner of commemorating our Lord's death, so far as the wine is concerned.

There is more necessity of confining the wine to a few cups, and thus compelling people to drink that which is unclean, than there is in having only one cup at our table to be filled with tea or coffee, and passed around for each member of the family to use, or of inviting our friends to our home, and in offering them refreshments, provide only one cup for the bouillon, and expect each guest to drink from it in order; or, if you please, furnish only one dish or spoon in which to serve the ice cream, and require one person after another to take a spoonful. How many guests would we have when the next invitations would be sent out? We are under the impression we would be kept busy reading "regrets," for unlike little "Oliver Twist," they would want no more of it.

If we would not do these things at home, why should our churches disregard all sanitary rules in this respect? Are we not called upon to guard our health, and to be as cleanly in the church as we are at home? If not, why not?

We do not know how it may be viewed by our readers, but it is our firm conviction, that in celebrating our Lord's Supper, at which He is supposed to preside in spirit, and to commune with us, we should honor Him, who yielded up His very life for us, at least, equally as much as we do our earthly guests, and we should be scrupulously particular, and provide all things cleanly.

We have frequently thought that the manner of serving the wine at the Lord's Supper could be improved, and that a reform should be instituted. We believe that if the question were put to vote the great majority of christians would advocate a change.

Now for the remedy. It is simple and easily applied. Let the officers of the churches provide as many small cups as there are communicants. These tiny vessels could be made of any material, either sterling silver, plated white metal, china or glass, but preferably the latter, because they could be kept clean with less difficulty than silver. They could have handles, and if necessary be flaring at the bottom, and they could be placed upon trays, or any other mechanical device, for instance, arranged in rows in pyramid shape, which device could have a handle adjusted in such a manner as to be easily carried, and each little cup could rest in a socket. From fifty to one hundred might be placed upon each tray, and the consecrated wine could be poured into these diminutive vessels and passed around for each person to drink from a cup no one else had used.

In those churches where the communicants go to the altar and kneel, a table or shelf could be arranged on brackets, inside and attached to the altar rail, in such a manner as to drop when not required for use. The cups might be placed upon this table of the Lord, and while the persons were in a kneeling posture, the clergyman could hand each one a vessel of the blessed wine.

It matters not in what manner the wine is administered, so long as it is done in a proper and cleanly way. It is the blessed wine we are called upon to drink, and not the cup, and it makes no difference how we take it, if it is only done in the right spirit, with a reverent regard for the holy purpose it is to serve, and in devout commemoration of the death of Him who instituted the ordinance.

We have been convinced for a long time that a reform is needed in this particular; we have mentioned the subject to several ministers, and to many church members, and they have, almost unanimously, indorsed our views; we have, in our humble way, called attention to the matter, and suggested a remedy; we now leave the subject in the hands of abler and far more eloquent advocates, who may be able to suggest some better plan, and if the seed sown will bring forth fruit, we will have served our purpose.

Typhoid Fever—Its Prevention and Restriction.*

There is a pretty strong conviction in the minds of sanitarians and physicians that typhoid fever is a disease which has but little right to exist in a civilized community. Such thoughts regarding things inevitable and necessary are neither reverential nor profitable, but intelligently directed efforts to diminish the prevalence of typhoid fever have been followed by so large a measure of success that we are justified in regarding it as one of the *unnecessary* diseases.

The prevention of typhoid fever must rest very intimately on a knowledge of its cause, or, at least, on an acquaintance with the known laws in accordance with which that cause operates. The essential cause of this disease is generally believed to be a minute organic germ, which is given off by the sick, and may be transmitted to the well in several ways.

The infectious germ is not thrown off through the breath, nor in the exhalations from the skin, as is the case in some other infectious diseases; but in typhoid fever it is contained in the discharges from the bowels, and, as recent observations indicate, in that from the kidneys. *Hence the proper disposal of the excreta is a matter of the first and highest importance.*

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* Issued by the State Board of Health of Maine.

Still another thing which experience seems to teach, and which the public should bear in mind, is that this fever-germ may be, not only developed, but multiplied outside the human body. That the fever patient is in some way a factory for the time being, engaging in producing and throwing off a poison dangerous to other persons, is a matter of common belief; but, of late years, there has come a settled conviction that this poison, or disease germ, as we now call it, may be, and very often is, developed and multiplied to a dangerous extent outside of the human body, when it is once introduced into places which present the favoring conditions of moisture, warmth and filth. *Hence the vital necessity of care not to plant the dangerous seed in soil congenial to it.* Such dangerous localities about our homes are ill-kept water-closets, privies, cesspools, drains and earth which is saturated with uncleanliness.

The poison of typhoid fever may sometimes be received into the system by breathing it in; but, undoubtedly the great majority of cases, the disease germ finds its way into the intestinal canal by means of food and drink. Reflection will show, and experience teaches, that there are many ways in which our food and drink may become contaminated with the germs. Some of the more frequent ways are these: The discharges are thrown into the privy or upon the ground, whence they soak, sometimes long distances, through the soil into the family well. The soiled clothes of the patient are washed, and the water carried by a loose and leaky drain which runs too near the well. Some kinds of food and drink are very absorptive of disease germs, and being kept too near the patient, become contaminated through the air. Many cases are known where milkmen, with fever at their own homes, have caused serious outbreaks of the disease among their customers, by keeping the milk, before it was distributed, too near the sick, by diluting it with contaminated water, or even rinsing the cans with the impure water.

So generally is typhoid fever regarded as due to polluted water, that, whenever this disease makes its appearance, we are justified in suspecting pollution of the water supply until the contrary can be pretty clearly shown.

PREVENTION.

What has already been said about the development of the typhoid fever germ and the ways it is taken into the system pretty plainly indicates the line of our endeavor in preventing it.

It is to be borne in mind:

First.—That filth, if it is not the direct cause, is at least the *nidus* (nest) in which the cause, or germ, may be developed.

Second.—That the poison is principally given off from the bowels.

Third.—That it is usually received into the system in the food and drink, particularly in polluted water.

(1) At all times, as well in the absence as during the presence of typhoid fever, let us try to keep our premises and their surroundings as pure and clean

as possible. Of all forms of filth none others are so dangerous to our homes as that of the "hole-in-the ground" privy, and that in and about our sink drains. The former should never be tolerated, nor the latter, either, in its usual forms.

(2) All discharges from the fever patient should be received in a vessel containing a pint or more of Solution A, Solution B, or Solution C (see fourth page), and kept covered by the disinfectant three or four hours, and then buried in the earth where they cannot by any possibility find their way into wells, springs, or brooks. *They should never be allowed to mingle with any kind of filth, in a privy or elsewhere.*

All clothing soiled with the discharges from the sick person should be immediately removed from him or from the bed. Disinfect carefully any spots on floor, carpet, or rug accidentally soiled. The clothing, both of bed and patient, should be disinfected by dropping it into a tub containing several gallons of Solution C, or Solution E, and should be kept therein until it can be boiled. It is very important that this rule be followed strictly; otherwise the matter on the soiled clothing dries, becomes pulverized, floats in the air, and endangers the attendant. This suggests the reason why washerwomen often take typhoid fever from infected clothing. After the clothing is disinfected it may be washed with safety.

After death or recovery, disinfect the room with sulphur fumigation, followed with washing the floors and other wood-work with Solution A, Solution C, or Solution E.

(3) As far as concerns the personal hygiene of nurses and attendants, it may be said that, if the foregoing preventive measures are carefully out, there is a hardly a possibility of their taking the disease, in fact, under such conditions, cases in which the attendants have taken the disease from the patient are almost if not quite unknown. Typhoid fever goes through families because usually all have been exposed to the disease-producing cause; or the first cases contaminate water supply, or "seed down" the privy vault and the house-surroundings with the disease germs.

Nurses and others in the family should eat nothing in the room where the patient is, nor anything which has been there. The food for the attendants and family should be prepared and kept as far from the sick as possible. Thorough boiling will kill all disease germs; so, while the fever is in the house, it is safer to boil all water and milk just before it is used.

DISINFECTANTS.

SOLUTION A.—For excreta, privy vault, wood-work and other surfaces.

SOLUTION B.—For excreta, privy wells.

SOLUTION C.—For clothing, the hands, excreta, vaults, furniture and wood-work.

SOLUTION D.—For the person, the hands.

SOLUTION E.—For clothing, the hands, the person, excreta.

BOILING.—For clothing.—SULPHUR FUMIGATION.—For use only where liquid disinfectants cannot be used, or to supplement other methods.

SOLUTION A.

Chloride of lime	6 ounces.
Water	1 gallon.

Mix. Cost about three cents, or seventy-five cents a barrel. This is about a three per cent. solution. (Decolorizes and destroys fabrics.)

SOLUTION B.—"*Purple Solution.*"

Corrosive sublimate	2 drachms.
Permanganate of potash	2 drachms.
Water	1 gallon.

Mix and dissolve. Label, *Poison!* Cost, two or three cents a gallon, when the chemicals are bought by the pound. (Stains fabrics; etc.).

The permanganate of potassium in this solution is used to give it color as a precaution against mistakes. It also, in this quantity, increases the deodorizing qualities of the solution. This is approximately a 1:500 solution of the sublimate; therefore, mixed with an equal quantity of water or liquids to be disinfected, it gives us a 1:1000 mixture. One ounce of this solution contains very nearly one grain of the corrosive sublimate.

SOLUTION C.—"*Blue Solution.*"

Corrosive sublimate	4 ounces.
Sulphate of copper	1 pound.
Water	1 gallon.

Mix and dissolve. Label, *Poison!*

This is sixteen times stronger than solution B, and is intended as a standard solution from which, by dilution with water, a solution of the proper strength for use may be made. To make from it a solution of the proportion of

1 :500, add 8 ozs. to 1 gallon of water.
1 :1000, add 4 ozs. to 1 gallon of water.
1 :2000, add 2 ozs. to 1 gallon of water.

SOLUTION D.

Labarraque's solution	1 pint.
Water	1 gallon.

Mix. Cost about twenty-five cents.

SOLUTION E.

Carbolic acid (90 per cent.)	7 ounces.
Water	1 gallon.

Mix. This is approximately a five per cent. solution, or in the proportion of 1 :21.

Sulphur Fumigation.—To use this effectively three pounds of sulphur should be burned in a room ten feet square. Every opening into the room, flues, doors, windows, cracks and crevices, must be closed, except the door by which the disinfector is to escape. The sulphur is to be burned in an iron kettle or other vessel set in a tub containing a little water to guard against fire. Ignite the sulphur with a few live coals, or with a little alcohol or kerosene and a match. Leave the room quickly, for the fumes are highly poisonous when breathed, and close the door tightly. Let the room remain closed twenty-four hours or more. Then air thoroughly for several days.

Boiling for at least half an hour is a sure way to destroy infection. Immersion in Solution C (1 :2000) or in Solution E, one-half strength, will lessen the danger from infected clothing until it can be boiled.

Burial Shoes.

Twenty thousand pairs of shoes, designed for corpses, were manufactured last year by one firm in Chicago. The soles are cut out of pasteboard and covered with grained paper, while the uppers are a combination of quilted satin and crochet work. The shoe is a patented article, designed by a woman milliner, and its use is rapidly growing.

Chemistry Incompetent to Determine the Hygienic Purity of Water.

BY GEORGE TROUP MAXWELL, M.D.,
Jacksonville, Florida.

WILL somebody tell me one good reason why chemical analysis should be employed to determine the potability of water? Of course, I speak of chemical analysis as a means of discovering in water the cause of any specific, or if it be preferred, zymotic disease.

If the doctrine of to-day, that zymosis is the effect of a living organism of microscopic proportion is founded on facts, as I believe, the effort of the chemist must be directed to the ascertainment, by his re-agents, of the presence in water of pathogenic germs. But when have and how can chemical reagents discover a bacerium?

So minute and penetrating are bacteria that, it is said, no filter yet invented has effectually prohibited their passage. The famous experience of Lausen, near Basle, is strongly corroborative of this view.

So sensitive are chemical re-agents that, by their use, proportions of the organic and inorganic elements in water used for drink, running up to millionths per cent. in 100,000 parts, have been detected. But of what advantage is that? Are such discoveries aids to etiology? Has it ever been shown that these elements in water and the zymotic diseases bear the relation to each other of cause and effect?

In a paper on "The Potable Water-supply of Austin, Texas," in the July number of the *Texas Sanitarian*, the following table of impurities appears:

Free N. H., 3,
Albuminoid N. H., 3,
Nitrates,
Chlorine,
Matter organic,
Total hardness,
Permanent hardness,
Total solids.

In the paper referred to the writer, Joe S. Wooten, B.S., shows that several ingredients enumerated above were, in the samples of water examined, in excess of the "standard of purity" recognized by "authorities." But suppose that all were in large excess a pertinent question is, would the presence of those so-called impurities, in the absence of pathogenic germs, cause any zymotic disease? It seems to me that the inevitable answer would be a negative. If water used as drink, however impure, does not contain the germs of typhoid fever, cholera, etc., it cannot cause those diseases. The specific cause must exist in water or the specific effect cannot follow.

I am not contending that those so-called impurities are desirable, or necessarily innoxious; for, like sewer air, they may depress vitality and lessen the power of resistence to the causes of disease. Besides, they, or some of them, furnish the pabulum for the growth and multiplication of pathogenic germs. But I do claim that, in the light which etiological science sheds upon the subject at present, those impurities cannot cause zymotic diseases. Ammonia, nitrates, nitrites, chlorine and the rest, in poisonous quantities, like strychnia, arsenic, opium, etc., produce harmful effects peculiar to each; but neither nor all together have or can cause typhoid fever, cholera, etc.

Is it not strange, to the degree of incredibility if we did not know it to be true, that chemists and hygienists condemn as dangerous to health water which contains, in suspension or solution, organic matter? Does not every individual of the animal kingdom feed, thrive and depend for life upon organic matter? There is more organic matter in a plate of "boarding-house soup," than in any well or spring in Florida; and there is more organic matter in a substantial dinner, than in all the wells in the State; yet if a chemist, by analysis, discovers in a sample of water two per cent. of organic matter, in 100,000 parts, he and some hygienists pronounce it polluted and dangerous!

Is it proven that even putrescent organic matter is unwholesome? Many of the lower animals feed exclusively on carrion. The Australians and other tribes of wild men revel in the putrescent flesh of fish, fowl, and four-footed beasts. It is well known that certain civilized persons, with what is euphemistically called epicurean taste, prefer certain articles of food kept until they become "*gamey*," that is until they have reached the stage of putrescence that makes it perceptible by the sense of touch, sight, smell and taste, yet without appreciable injurious effect. The good housewife will keep tough meats before cooking and serving till they become tender. Is it not incipient putrefaction that makes the meat tender?

It is simply a question of taste; and of such matters it may be said: *de gustibus non est disputandum.* In fact, the putrefactive germ—bacterium termo—is not pathogenic.

Doubtless a potent reason why the "common people" are skeptical of the value of the Science of Hygiene, and even ridicule the interest and zeal which hygienists of our day manifest in investigations of water-supply is, that the theories of the latter, based upon chemical analyses, conflict with the facts of their experience. To the announcement: "Your water-supply is impure and dangerous," the reply is ready: "Myself and family have used this water many years without serious consequences, and I think your apprehensions are unfounded." One such fact is, to them, worth a thousand theories.

The explanation is, that the hygienists' fears are founded on the results of chemical analyses which discover chemical impurities that are really harmless, as experience proves. But should the same water become polluted by pathogenic germs, disease and possibly death would ensue.

Take the case of Lausen for illustration. The water-supply of that hamlet had been in use many years without causing disease, but the introduction of a case or cases of typhoid fever to the vicinity, at a farm-house, near a creek in which the discharges of the patients had been cast and their clothes washed, converted what had been wholesome into disease-producing drink.

The experiments which traced the connection between the creek and the well conclusively demonstrated that the typhoid fever germs had passed by percolation from one to the other, through nearly a mile of earth; and shows, also, that there is danger that, sooner or later, any surface well or spring may become polluted by pathogenic germs. But chemical tests are unreliable, because they cannot discover germs, and, therefore, lead to incorrect conclusions from erroneous premises. The theory that such "impurities" as are found in the tables of "standard authorities" can cause zymotic diseases, is out of date.

It seems to me, therefore, that the chemist as a factor in the determination of the question of the hygienic purity of water is, in slang phrase, a "back number." To the microscope and microscopist must we look for the solution of the problem.

Earthworms as Carriers of Infective Germs.

Tuberculosis may be diffused in many ways, as bacteriological research is constantly reminding us. Its bacilli may be stored and spread by subsoil worms, according to a series of experimental studies lately completed by MM. Lortet and Despeignes. These worms, for several months and in various parts of their organism, can preserve the bacilli in question and reconvey them to the surface of the ground. Early in their researches MM. Lortet and Despeignes were confronted with the objection that in garden soils, in which worms abound, the bacilli of septicæmia, great in number and in activity, are also met with—bacilli which, on experiment by inoculation, are capable of developing fatal disease, prior to the tuberculous process. This objection, however, they were able to dispose of by having recourse to a dry, silicious earth passed through a fine sieve, in which bacilli are not to be found; while there next step was to place the tuberculous substance at the bottom of vases filled with this earth, on the surface of which they sprinkled a layer of white and very pure sand; and finally, they covered everything with a sheet of paper. After a few days the worms which were concealed in the earth at the bottom of these vases came up and deposited their intestinal evacuations on the sand—evacuations which MM. Lortet and Despeignes succeeded in collecting without risk of contamination, and in finally inoculating in a number of guinea-pigs. In consequence of these inoculations there was developed in these guinea-pigs a generally diffused, very distinctly marked tuberculosis. The experiment, far from a complex one, was successful in demonstrating that earthworms can reconvey to the surface of the soil not only the products of their digestion, but also, together with these, the bacilli of tuberculosis in full possession of their infective virulence. A similar fact, it will be remembered, was established by M. Pasteur in his bacteriological studies on charbon. For this latter disease, therefore, and in no less degree for that of tuberculosis, it is conclusively indicated that their infective débris should not be consigned to the subsoil without complete destruction of their germs. Unless this destroying process has been practiced such débris may be seized upon by earthworms, stored in their organisms and reconveyed to the surface, to become again the source of a new contagion.

THE ANNALS
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EDITORIAL

Letters on Health.

The Cholera.

(Continued from September issue.)

Of course, I felt sure that you would ask me about cholera, so that, even before your letter was received, I had concluded to devote this epistle to the subject that is uppermost in everybody's mind. It does seem to me outrageous that in these days of sanitary enlightenment we should tolerate the continuance of a state of affairs in India by which this disease is kept alive to periodically ravage and devastate the surface of the globe. If, somewhere in China, a gang of murderers had their headquarters, wherein they propagated and gained strength to enable them to sally forth and do murder in every land, how long, think you, would it be ere the civilized world would unite in a protest to the Chinese government, and, this failing, to a concerted attack upon and destruction of this nest of murderers. Precisely this state of affairs has existed, and does, to-day, exist in India. We must, in the light of latter-day science, regard the cholera microbe as being as much of an entity as is the human being; as being possessed of an individuality, as having a life history, as being a visible, tangible, ponderable organism; as being, just as truly, a living, moving, propagating murderer as would we regard the fancied criminal of China, and as we would handle the one so must we handle the other.

We must destroy not only the murderer that is at our door and in our midst, but we must also exterminate the nest and the conditions that make him a possibility. If the present cholera epidemic will cause the civilized nations of the world to effectually insist upon the abandonment of the "Holy Well" at Mecca, the sanitary regulation of the pilgrimages to this and the other sacred cities of India, and to the enforcement of sanitary measures throughout Asia, the many thousands of victims will not have died in vain. I recognize, of course, the difficulties that would be encountered; I am fully aware that measures necessary to eradicate the disease from Asia would mean an interference with many of the religious customs of Mohammedanism, and I am fully alive to the religious zeal of these people; I know of their great tenacity of religious customs, and I am conscious of the frightful results of a possible "religious war," with the countless hordes of Islam arrayed against Christianity; but I know also, equally well, that so long as India remains in its present insanitary condition, so long will cholera ever remain a menace to the whole world. A "religious war," with all it horrors, would be a decisive conflict; once subdued, as would be the inevitable result, cholera would soon become a thing of the past, and it is hardly likely that such a war would cost Christianity any more lives than has the present cholera epidemic. As it is, the religion of Mohammed is waging an insidious but most fatal warfare against not only the rest of the world, but against Mohammedans themselves, and the religiously and sanitarily benighted fanatics of Asia might well be expected in time, as the result of experience, to thank those who might forcibly, if necessary, elevate them from their quagmire of superstitious and disease-breeding filth. Diplomacy might accomplish the result; force, mayhap, would be necessary; but one thing is as certain as the rising of the sun: so long as India remains as it is, so long will the world be periodically ravaged by cholera.

So much for this aspect of the question; it is always a waste of time and words to advance arguments to prove accepted facts, and since it is an accepted fact that India is the home of cholera, and that it is so because of the insanitary condition of the country and the unhygienic practices of the inhabitants thereof, there is no room for argument as to the self-evident remedy that stares us in the face. You ask me as to the efficiency of the means that have been employed to keep the disease out of this country. Since the efficacy of any procedure is generally judged by the public in accordance with the result, it would be fair to assume that these means may be considered fairly satisfactory, so far as the protection of the public is concerned, though, of course, those who suffered the many inconveniences incident to quarantine will complain, and to a certain extent justly so, of the hardships that they were compelled to undergo. These inconveniences were really chiefly due to the generally mistaken policy that guides so much of our sanitary legislation. The *possibility* of danger does not appeal, as it should, to the people with force sufficient to cause them to realize the necessity of adequate preparation. A danger that stares us in the face immediately arouses all our energy and activity; but, as I say, the *possibility* of such a danger is regarded, to a great extent, with indifference. Had our quarantine arrangements been properly made beforehand; had the National Government, in time, devised and perfected and had ready all that goes to make up a perfect system of quarantine, then would the hardships and inconveniences that have been so bitterly complained of have been reduced to the minimum. But, you ask, would any system of quarantine have done away with, or rather, would not any system have still caused all the inconvenience to commerce that has been experienced? Yes, I must admit, such would have been the case, and right here, then, comes in the question as to whether quarantine is necessary. I would have you clearly understand the distinction that ought always to be clearly made between *quarantine* and *inspection*. The recent experience of England would seem to argue in favor of the sufficiency of inspection; but you must not forget that for a long time the people of England have been fully alive to the importance of personal and municipal hygiene and that England is to-day a very clean country.

It would seem almost as though we might say that given a cleanly country and a cleanly people, inspection thoroughly carried out would prove an efficient safeguard; but while I would not like to characterize my country and my countrymen as dirty, I yet know that there is no other country in the world to which such countless hordes of filthy persons are continuously flowing in, no country into which the dregs of Europe are so constantly pouring.

With this factor to consider it is a question whether inspection alone would be sufficient. England did not have the immigrant factor to contend with and inspection seemed to be sufficient; we did have and I feel strongly inclined to think that while there was much in the quarantine of New York bay that might be improved upon, there is yet good reason for us to think that had it not been for this very quarantine we would to-day have cholera quite prevalent amongst us.

You feel, no doubt, to-day, that a great deal of the newspaper scare that has been made during the past month was unnecessary. This reminds me of the town council out West that *abolished the local board of health because the town had been so healthy for some time that they failed to see the necessity for such a body*. Because we have not had cholera then you think all this agitation unnecessary, when, in truth, it was because of this very "*scare*" (if you like the word) that we have been enabled to keep it out. It was this arousing of the people to the magnitude of the danger that threatened that rendered possible a rigid quarantine, and equally did this scare start a "cleaning-up" throughout the country, the equal of which has never been seen before.

There is one thing of which I think we can feel reasonably sure, and that is that the cholera germ is pre-eminently fond of filth. Dirt and disease in general are great friends, but it would seem that in an especial manner is this true of cholera. While we have typhoid fever, diphtheria and so on always more or less present in every locality where only a reasonable amount of filth, so to speak, is present, it would seem that cholera always lives in, feeds on, multiplies and gains its greatest powers in those localities where unusual filth abounds. When these germs reach a cleanly locality it would seem that they lose much of their virulence, from which we draw the pregnant lesson, that in cleanliness is to be found our chief safeguard; not cleanliness alone, or even chiefly, of person, but of surroundings.

Now, I come to a very important question: You ask me, are we through with cholera; have we anything more to fear from it? Now, no one believes less in "scares" than I do, yet equally strong is my belief in telling the truth about such matters. If you will look at the history of this disease in the past, which we publish elsewhere in this issue, you will note that it always takes two or three years from the time it starts on its journey of devastation until its virulence seems to be quenched. Cold weather may hold it in check, but it will not destroy it.

I give my honest answer to your question when I say that I believe that we have reason to be prepared for an invasion of this disease next spring, and that the most dangerous time, the time most likely for an invasion, is when the people expect it least, for at such times the necessary precautions are very apt to be relaxed. I give this not only as my own opinion, but as the carefully matured and expressed opinion of the State Board of Health of Pennsylvania. At the time of this writing this Board is trying (as it has been doing since the beginning of this emergency), to secure the necessary power to properly protect this State. We want not to quarantine, but to *inspect* all immigrants that enter the State. Our system would not interfere with the railroads, the officials of which having met us in consultation and understanding what we want to do, far from opposing, meet us with every encouragement.

Then why do we not do so? you ask. For want of funds. It is time for the people to understand the true position of the State Board of Health. If cholera gains a foothold in this State, the public will cry out and ask why the Board of Health did not keep it out. How, think you, would Meade have met Lee's invasion of Pennsylvania in 1863 if he had been limited to an expenditure of $6,000 per year to maintain his army; yet this is precisely the sum of money at the disposal of this Board with which to meet all its duties. This Board feels that there is a liability of a cholera invasion at any moment, and it is satisfied that the only way to effectually keep it out is to examine every person likely to bring it in. I remember how, years ago, any person entering Rome, among whose effects a red shirt might be found, laid himself open to the suspicion of being a Garibaldian and he was scrutinized carefully.

So to the eye of the practical inspector the likely conveyor of cholera would be evident. It is the idea of this Board that such an inspection system should be continued indefinitely until, in the judgment of the Board, it was no longer necessary. But although the members of the Board give their services to the people of the State gratuitously, it is impossible for us to find a sufficient number of inspectors either willing or able to do likewise.

The situation of affairs has been laid before the proper authorities, and it is hoped and trusted that by the time this writing is in print the funds necessary for this work will have been provided.

There is one thing that ought to be clearly understood by everybody; the State Board of Health (of this and other States) feels that it knows how to keep cholera out of the State, or to nip it in its incipiency if it gets in, provided it is armed as it thinks necessary; the Board has made its needs known, and if the means are not forthcoming then we ask the people, in all fairness, not to hold us responsible for the results.

Well, now you ask me, supposing cholera to be present in your neighborhood, what shall you do to personally avoid it? In the first place don't get frightened; try as hard as you can to divest yourself of fear of the disease; believe me that fear is a potent factor in the production of disease, and that this fact is especially true of cholera.

While personally I am somewhat inclined to think that there is a possibility of the germ being inhaled or being deposited on the lips from the atmosphere, yet I can give no proof for this idea (my own conviction being founded rather on negative grounds in so far as I cannot see why such a contingency is impossible), the generally accepted doctrine being that the germ must be taken into the stomach through the medium of food or drink.

Remember, that for the germ to do its work it must be alive; you might drink a ton of cholera germs and they would do you no harm if they were dead; therefore is it that you hear the universal recommendation that nothing should enter the mouth that has not been thoroughly cooked, because a thorough cooking temperature will destroy the vitality of the germ. In addition to this I would suggest that you put five drops of aromatic sulphuric acid into every tumbler of water that you drink; this will pleasantly acidulate the water and will be very likely to help your stomach to destroy any germs that may have found their way thereto.

Remember again, because it is most important, that the seat of action of these germs is in the bowels, and that the juices of a healthy stomach are capable of destroying their vitality. Hence is it vitally important that, is cholera is in your neighborhood, you should be very careful of your stomach. You should sedulously avoid all highly seasoned or unhealthy (because indigestible) food; you should absolutely "taboo" all liquor, notwithstanding that some have claimed that liquor confers an immunity; you should, in every way, endeavor to preserve the healthiest possible condition of the stomach.

The personal precautions—those that the individual can avail himself of—are, as we see, necessarily limited and may be summed up as: Keeping one" self (particularly the stomach) in good condition; in boiling all water and thoroughly cooking all food and in acidulating our drink, as recommended.

These suggestions may seem insignificant in view of the mass of literature that has appeared on the subject, yet when condensed they may be summed up practically as above.

Of course, there are many precautions that may be taken by the official to keep the disease out, but I think I have said enough to let you see that these precautions are unavailable unless the funds necessary for their prosecution are forthcoming.

In conclusion, then, I would say to you that I do not think that you are by any means done with the cholera; even though it may remain quiescent during the winter (and we have no positive assurance that such will be the case), there is abundant ground for holding that the advent of warm weather will very likely light it again into activity, and I urge upon you, in a parting word, with all the fervor of which I am capable, that you do not allow the excellent precautions which this "scare" has inaugurated to be lulled into slumber by the apparent security which the country seems now to be enjoying.

Since the above words were written, a conference between Governor Pattison of this State and the State Board of Health, has resulted in the assurance of the Governor that whenever the Board shall make known to him its belief that there is a danger of an invasion, he will, at once, place at the disposal of the Board whatever sum of money may be necessary to meet the danger.

[TO BE CONTINUED.]

The Sanitary Condition of Chicago.

> "It is now well known abroad that Chicago is a pest-hole, and unless something is done mighty quick to improve matters, the expected millions at the World's Fair will fail to materialize, for, as the *Medical Record* puts it, 'people can find other and more pleasant means of suicide nearer home.'"

FROM the *Pacific Medical Journal* for August of this year, we take the above quotation. So many similar statements have appeared in different medical journals, that we felt it important to ascertain the exact state of affairs. With this end in view, we have requested the present, and the late, Secretaries of the Illinois State Board of Health to give us a statement, for publication, of the present sanitary condition of Chicago and of the sanitary measures proposed in view of the World's Fair.

We regret that both of these gentlemen found themselves too busy and too unwell to comply with our request.

We have, therefore, no reliable information on the subject, but, personally, we feel confident that the unparalleled energy, industry, good sense and intelligence of Chicago, will leave nothing undone that ought to be done to put the city in first-class sanitary condition.

Athletics in France.

We are all familiar with the fact that, whatever qualities may be wanting in the French character, it clearly exhibits a perception—sometimes even too keen and too fearless—of logical sequences and of their practical issues. This national trait was illustrated, though in an eminently useful and rational degree, at the Physical Education Congress which recently met in Paris, and which, doubtless after due discussion, has left on record a series of creditable resolutions. These, if carried out, should at all events ensure the upturning of every available stone in order to rear the fabric of a sound physique. They make provision for the maintenance of a variety of forms of healthy recreation, from cycling to the juvenile matter—albeit no trifle in its own place—of ordinary school play.

Take Care of the Child, and the Man will take Care of Himself.

Somewhat in this line is the suggestion of Dr. Goodhart, an eminent English physician, who, after referring to what he believes to be the exaggerated importance attached to the microbe by the pathology of to-day, lays special stress upon the constitutional element in the production of disease. He believes that certain diseases of adults appear in childhood in disguised form. For example, gout, as such, is not seen in children, but he believes appears as rheumatism. The uric acid diathesis of childhood certainly elucidates certain conditions of adult disease. White, pasty fæces are frequently precursors of dyspeptic troubles in later life. The acute pulmonary catarrhs developing without apparent cause in certain children, are not infrequently followed by asthma a few years later.

NOTES AND COMMENTS

Salt in Milk.

Dr. A. Jacobi states (in the *Archives of Pædiatrics*) that common salt should invariably be added to cow's milk when infants are fed upon it; and to woman's milk if it forms solid coagula in the bowels and is indigestible in consequence. Salt "prevents the coagulation of milk by either rennet or gastric juice."

The Barometer and Bodily Weight.

It is said that a man weighs less when the barometer is high, notwithstanding the fact that the atmospheric pressure on him is more than when the barometer is low. As the pressure of air on an ordinary sized man is about fifteen tons, the rise of the mercury from twenty-nine to thirty-one inches adds about one ton to the load he has to carry. We would be glad to hear from our readers on this subject.

The Dignity of The Sanitarian.

Sanitation (says *Florida Health Notes*) is, next to the preaching of the cross, man's supremist duty. To convince a single person that a given disease is avoidable, may save a human life. To convince him that the disease is contagious, may prevent a widespread epidemic. To convince the people of a State that disease may not only be avoided, but actually exterminated, means a lowering of the death-rate by numbers which are but little short of miraculous.

How Long Should a Diphtheria Case be Isolated.

This most important question is discussed by Dr. Prince, in the *Boston Medical and Surgical Journal*: It is a matter of vital importance, for Dr. Prince tells us of a case wherein the patient, supposed to be well, made a visit to a relative in Boston nine days from the date of his "getting up." One week after his arrival, a child in the family was attacked with diphtheria and died. An out-break of diphtheria, in a hotel at Nantucket, followed the arrival of a person just recovering from diphtheria, and pronounced well by the attending physician. One of these cases, when supposed to be well, carried it to a hotel in town. Three cases of diphtheria in one family, closely followed the advent of a nurse who had just come from attendance on a fatal case.

Dr. Prince thinks that evidence goes to show that poison is retained in the mucous membrane longer than is generally considered to be the case. In lieu of definite knowledge he has adopted the arbitrary rule of advising quarantine precautions for one week after the patient appears to be perfectly free from disease. This seems to be a fairly safe rule and one that is desirable.

In Cases of Contagious Disease.

The Rochester, N. Y., Board of Health, has adopted an ordinance providing hereafter that bodies of persons who have died of contagious diseases, shall be immediately enclosed in an air-tight coffin and buried within thirty-six hours after death. It also provides that the funeral shall be strictly private, and that in the removal of the remains for burial, only hearses or tightly covered vehicles shall be used.

Carrier-pigeons and Vaccination.

At the last meeting of the Académie de Médecine, Dr. Hervieux read a report by an army surgeon, M. Stroebel, on the transport of vaccine by carrier-pigeons. It appears that one pigeon is capable of conveying in one journey from five to six tubes. The utility of this means of transport in times of war is very obvious, and one can imagine the joy of the representatives of the Army Medical Department at the apparition of a flock of these swift vaccine carriers in a besieged town.

Sanitation not Quarantine.

Commenting on the danger of epidemic disease that is more or less threatening, *The Pacific Medical Journal* very truly and impressively says that "sanitation" and not "quarantine" is the watchword of the modern sanitarian, for, while you stand guard with muskets pointed seaward ready to blow the microbes skyhigh, the little imps will crawl in under your very noses, establish themselves wherever they find food and climate to suit, and hold high-jinks before you are aware of their presence. Theretore, if you would escape, *look within rather than without.*

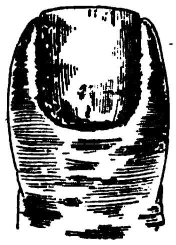
Ancient Punishment for Adulteration.

If we are to judge of the general standard of morality from the severity of punishment with which adulteration was visited in times gone by, then must we conclude that, by comparison, the morality of to-day is at a low ebb, indeed, for, from the *Medical and Surgical Reporter*, we learn that in the "Annals of the City of Nuremberg" of Counsellor Balthasar Muellner, which are kept in the archives of the ancient burgh, among other very interesting documents there are certain notices of the laws for the punishment of adulterators of food, whose Draconic terrors far overstep, in blood-thirsty penalties, the sanguinary code of Kaiser Karl V. In the year 1456, Hans Koelbel, a citizen of Nuremburg, and Lienhard Frey, of Thalmessing, for having adulterated some saffron, were, along with there adultered wares, "on Friday after Misericordias," burned alive at the stake, and a woman who had assisted them was burned alive on the Monday after Boniface. In Anno, 1459, Ulrich Heydenheimer, citizen of Nuremburg, having added water to the wine which he was selling, was, by special act of grace, let off with the light punishment of losing both his ears. In Anno, 1464, Margareth Wessnerin, a huckster, who was caught in giving light weight, was buried alive near the common gallows.

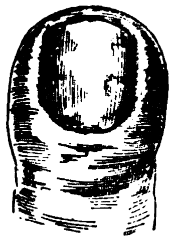
Vegetable Butter.

F. Jean states that an alimentary fat has been manufactured at Mannheim from the kernel of the cocoanut (*cocos nucifera*). A hectare of cocoa palms, representing 225 trees yield yearly 800 kg. of oil. Hitherto the use of these oils has been hindered by their acrid flavor; but by treatment with alcohol and animal charcoal the rancid flavor is removed and the product is rendered white. This is the only fat which is analogous to the cow's butter, as it contains the same proportion of soluble fats. It has the advantage of containing no pathogenic germs.

To Prevent Ingrowing Toenails. Trim Properly.



THE RIGHT WAY.



THE WRONG WAY.

—*Hot Springs Medical Journal.*

Prime Requisites of a Healthy Home.

The first requisites of a healthy home (says *The Sanitary Inspector*) are a dry spot of ground, a dry cellar and a dry foundation under it. These should be secured by deep subsoil drainage outside the foundation walls with unglazed porous tiles. They cannot be secured with cement or concrete, nor even with asphalt after the cellar has been built in the usual unintelligent manner.

After planning protection against dampness from below, see that it does not threaten from above. Trees should not overhang the house nor stand too near it on the south, east and west sides. On these sides there should be an open area of sunshine in the immediate vicinity of the house, not of shade.

If possible, plan the family sleeping rooms to come on the east side so that the morning sunshine may stream into them; not as a concession to sentiment, but to enable the housewife to air and *sun* the bedding thoroughly in the morning hours before the beds are made. This is an important item in the hygiene of the sleeping room.

And right here it may be said that the morning airing of sleeping rooms as practiced by some persons—raising the windows only a few inches, or opening a swinging pane—is a mere farce on window ventilation. The weather permitting, the sashes should be opened wide. The mechanical action of the wind is needed to flush out the old air and its impurities and to fill the room with that which is pure and healthful.

Sterilization of the Infectious Dead.

Dr. S. P. Wise, a member of the Ohio State Board of Health, who frankly admits a repugnance to cremation, proposes in its stead, the submission of a body dead of infectious disease to sterilization by exposure to steam at a temperature of 212° for five or ten minutes, together with the use of a solution of corrosive sublimate in the external orifices of the body and a subsequent complete closure of these openings. This, he considers, would render the body innocuous, and he calls upon some enterprising inventor to construct a portable steam sterilizing apparatus for the use of undertakers.

Dust, Upholstery and Disease.

Householders in furnishing would do well to remember that the ordinary practice of covering a floor with carpet is not without its disadvantages, even its dangers. The particles which give substance to the pure search light of a sunbeam as it penetrates the window pane are of the most varied character. Harmless as are very many of them, there are also many more possessed of true morbific energy and capable of almost unlimited multiplication. Anyone can see therefore how, when sheltered in dusty woollen hangings, chair upholstery and carpets, they render these articles veritable harbors of disease. The less we have of such the better, especially in bedrooms. Some practical deductions naturally suggest themselves. As to curtains and carpets, it is but rational that they should, as a rule, consist of the smoother and harder fabrics which will bear thorough and frequent brushing. If thicker floorcloths and rugs be used, they should be such in size and arrangement that they can be readily taken up and beaten. It is but part of the same argument to say that as much of the floor as possible should be either varnished or laid with oilcloth, so as to allow of frequent cleansing. Cane and leather, for a like reason, are incomparably superior to the richest upholstery when we come to speak of general furniture. Some, perhaps, may imagine that in making these observations we treat this matter too much as a hobby (says *The Lanat*). Only one circumstance, however, is required in order to convince any such of their real and practical significance, and that is the actual presence of infectious disease. When this appears all forms of cumbrous comfort in the apartment must give place not merely to a freer and simpler arrangement, but even to bare, sunlit and airy desolation.

Disposal of Sewage in Germany.

The disposal of sewage is a question which has been to the fore for a good many years in various countries, says *Engineering*, but which, perhaps, nowhere on the Continent has been dealt with in a more systematic manner than in Germany. In Berlin the drains from the houses receive both the rain water and dirty water, the dirty water from the kitchen, etc., and the contents of the water closets, conducting them to a system of radial sewers, through which they, by a natural fall, proceed to a dozen various pumping stations within the area of the town. From these the sewage, through the medium of combined force and suction pumps, passes through pipes of three feet or still greater diameter to the land which the corporation of Berlin possesses, and where the sewage is used as a fertilizer. The sewage makes its final exit through a system of conduits so arranged that before reaching them it has parted with all its manurial power to the soil through which it is made to pass. The sewage water thus filtered reaches the river through the natural fall of the conduits in a comparatively purified state. The sewage is an exceptionally good manure, and the yield of grass on those fields that receive it, is something quite out of the common, so that it can be cut some six or seven times during one summer. This system also seems to answer well as far as the sanitary side of the question is concerned, but still there are a good many places which prefer the method by which the sewage is collected in large tanks, whereby it is possible to benefit larger areas by its fertilizing qualities. Frankfort-on-the-Main is another German town where the sewerage system is very perfect, but owing to the excessive cost of land in that locality, the sewage is not, as in Berlin, used as manure in the first instance. The sewage is purified before being allowed to escape into the Main, and the residue is pumped into receptacles from where the farmers fetch it. The town of Hanover is also about to adopt the sewerage system on a larger scale. In Augsburg and Heidelberg the barrel system is used, much more satisfactory in the latter than in the former town. In Heidelberg the corporation itself attends to the emptying of the barrels.

A Plea for Public Health in Villages.

When a fire breaks out in a village, every person considers it a duty to give a general alarm, and, especially, prompt notice of it to the fire departments and all citizens co-operate for the speedy extinction of the fire. If this were not done the property in the village would be quite generally endangered by the possible spread of the fire. Why is it that when a dangerous communicable disease breaks out—one which may spread and endanger quite generally the *lives* of persons in the village—there is, so frequently, no such general alarm and prompt notice to a well-organized department of the village government, and no general co-operation for the extinction of the disease? Is not a person's life of more consequence than his property? Is not the saving of the *lives* of their children of as much consequence to the inhabitants of the village, as the saving of their *property*? If each person were forced to answer this question, relative to his own children, I believe that he would feel like a degraded, miserly wretch if he did not promptly sacrifice his property in defence of the life of his child. Yet, collectively, the citizens generally do *not* do for the protection of *life*, what they do for the protection of *property*—they do not maintain a well-organized health department so generally as they do a well-organized fire department. I believe it is because they do not so generally know that lives may be saved by well-organized health departments, or because they do not know the value of human life to the community.—*H. B. Baker, M.D.*

Constipation.

We have always held that constipation is at the bottom of much of the sickness that afflicts humanity, yet many persons are such victims of the constipated habit that nothing, short of powerful drugs, seems able to produce evacuations, while we all know that the habitual use of purgatives makes the constipation only more pronounced. From a foreign journal we note the following suggestion of a Berlin physician, which may, possibly, be the means of bringing much comfort to many:

Make a cushion, in which insert three or four pounds of granulated lead distributed equally in several layers of tow in such a manner that the apparatus will adjust itself to the form of the abdomen. This is placed on the stomach in the evening or in the morning, or even all night, in which case the cushion is secured by straps. Usually an hour or an hour and a half of application sufficed to produce a regular stool. During the past year the cushions have been used in fifteen cases with excellent results, the application being made for a half hour in the morning before rising.

Salt and Health.

We all know how universal is the demand of animal life for salt, but to many the ideas set forth by the editor of the *Northwestern Lumberman* will be novel. In Saginaw and Bay Counties, Michigan, some 2,000,000 barrels of salt are manufactured yearly.

The manufacture of salt is a simple process. Wells are bored several hundred feet, and the brine pumped out of them into vats. The salt blocks are medium or large size buildings, as the case may be, filled with evaporating vats and bins for the salt. Through these vats steam pipes run, and the heat from them is what does the work.

Learning that the salt operatives were an unusually healthy lot of men and that they seemed peculiarly exempt from catarrh and lung diseases, two of the oldest physicians in Saginaw were interviewed on the subject. One said that during his many years of practice he had not known a case of catarrh or consumption among the salt men, but he did remember that he had been called upon to treat pneumonia. The other one said that he had never known among these men a case of catarrh or lung disease, either chronic or acute. Moreover, many a case of malaria had been cured in the blocks. The physician first visited was asked if he had ever recommended what might be called a salt block cure, and he said he had not, that he had no idea a patient would persevere in the treatment.

These salt blocks are filled with a hot, salty, medicated vapor, and the inmates become thoroughly pickled. If cannibals were to get hold of them they would be already seasoned for eating. The sweat is running from their pores from morning till night, and their skin is as white and soft as a babe's. Here they live in these hot, vapory places ten hours every day, and are absolutely exempt from the diseases named above—diseases which are a constant dread of the people outside, and which fill our cemeteries.

Rubber Coats and Infectious Disease.

We are delighted to learn from *The Casket* that the much-talked of rubber coat ordinance has been adopted at Detroit, Mich. It was approved by the mayor, May 24, 1892, and Section 8 provides as follows:

SEC. 8. Every physician having a small-pox, varioloid, typhus fever, Asiatic cholera, glanders, erysipelas, diphtheria, scarlet fever patient, or any other contagious disease, dangerous to the public health, during each and every visit to to the same, shall exercise all the precautions known to the profession. Every undertaker having in charge the body of any person who has died of either of the above mentioned diseases shall, during the time he is preparing such body for burial, wear a long rubber overcoat buttoned to the chin, and after he has properly prepared the body, shall spray his hair, beard, hands and boots, especially the soles, with disinfectant cologne, and shall wear his rubber coat when carrying and or arranging said coffin or casket during the funeral. After said funeral the undertaker shall spray his hair, beard, hands, boots or shoes and rubber coat with said disinfecting cologne before returning home or walking the public streets. Any person nursing or taking care of any person sick with either of said diseases shall, before going upon the streets or visiting any other house, take a warm bath, and disinfect the hair of the head, the hands, the finger nails, by means of the above mentioned spray, changing all underclothing and clothing which had been worn while in attendance on the patient, and see that the former underclothing and clothing are thoroughly disinfected by either sulphur, boiling in water, steam or spraying with disinfectant cologne, and allowed to dry, and shall not attend any non-contagious disease without a permit from the health officer.

Every clergyman conducting burial service over the body of any person dying of either of said diseases, shall observe the regulations given above for physicians.

SPECIAL REPORTS

State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania.

PRESIDENT,
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SECRETARY,
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PEMBERTON DUDLEY, M.D., of Philadelphia.
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S. T. DAVIS, M.D., of Lancaster.
HOWARD MURPHY, C.E., of Philadelphia.
BENJAMIN LEE, M.D., of Philadelphia.

PLACE OF MEETING,
Supreme Court Room, State Capitol, Harrisburg, unless otherwise ordered.

TIME OF MEETING,
Second Thursday in May, July and November.

The Hygienic Aspect of the Sweating System.*

[Specially prepared for THE ANNALS OF HYGIENE by the Secretary of the Association].

IT is the object of this report to give some account of the discussion of the "sweating system," by the American Social Science Association at its recent annual meeting, during the week ending September 3, 1892, at Saratoga, so far as that discussion was upon the question of sanitation and hygiene. I am especially glad of this opportunity, because, in my opinion, the practical problem presented by the "sweating system" is a hygienic problem. If there is to be intelligent legislation in the matter it must be based upon a true estimate of the real gravity and importance of certain facts, which true estimate the members of the medical profession alone can supply.

My own paper was based largely upon the Report of the Select Commission of the House of Lords, 1888–90.

There are many dozens of definitions of the sweating system, but no two people have ever yet agreed upon any one. The trades of which complaint is made include tailoring, bookmaking (in England but not in America), cabinet making, chain and nail making, cutlery, the nuts and bolts trade, shirt making, furriery, and the manufacture of ostrich feathers, fancy boxes, umbrellas, artificial flowers, and portmanteaus.

It is to the tailoring trade that I have paid special attention, as it is in regard to that trade that the chief complaint has been made in this country.

A typical "sweating shop" in the tailoring shop is a room twelve feet by twelve, and eight feet high, with seven or eight men or women, some with sewing machines and some without. The people also keep busily at work, and it is impossible to tell by looking at them who is the sweater and who is his victim. These rooms are in most cases* not lived in by the people employed in them, and in a great many cases not lived in by the man who employ them,—the so-called "sweater."

Then comes the large shop like that of Mark Moses, who was one of the chief witnesses in the House of Lords Commission. These shops will contain from ten to twenty workers, seldom more than twenty-five, and will be built in what they call the "garden," in London, namely the back yard, or in an attic.

But besides these regular shops, large and small, there are also a very large number of home workers.

The workers in the shops are mostly Jews, the home workers are almost entirely Gentiles and are chiefly women.

The hours of work are often terribly long. In the shops in the tailoring trade they average fourteen hours a day for five days in the week, and sometimes twelve hours another day. Thursday is apt to be a long day, sometimes twenty-four hours (one witness testified that he had worked forty hours at a stretch. There is no work on Saturday.

The work-places, especially the small ones, and most of all the ones where the "sweater's" (employer's) family lives, are apt to be very dirty. Just how dirty they are it is difficult to find out or to state, in the absence of any dirt-measure, or exactness in the meaning of adjectives. The descriptions by reliable witnesses certainly put it is high as "pretty bad."

There are often too few water-closets, one for fifty persons of both sexes is the worst case I have found in the testimony. The reports by a factory inspector as to the sanitary condition of 1,478 houses, where work was carried on by foreigners, included "no trap in the sink," "heaps of filthy refuse were about," "drinking water from cistern not covered over," "no proper dust bin," "filthy closets without water and that were not ventilated." The same inspector, a careful witness, to judge from his printed testimony, says that "in the lowest grade of sweating," the sanitation "is more deplorable, in many instances, than tongue can describe."

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* As discussed before the American Social Science Association at Saratoga.

* References where no book is mentioned are to this report. If by one number it refers to the number o the question in the report.

* So in London, the contrary is true in New York. In Boston this typical shop has pretty much disappeared, leaving the large attic shop and the house worker.

The conditions in London are worse in the small shops, where less than ten persons are employed, than in the larger ones, and this former class is by far the most numerous. In the provinces, there is much testimony that the large shops, sometimes that the regular tailor shops on the premises of the selling firm, never classed as "sweat-shops," are the worst. The worst paid workers are the women, working in their own homes, sometimes for a sub-contractor, sometimes directly for the firm that sells to the customer.

The shops are over-heated, because a fire is necessary to heat the irons used in pressing. They are ill-ventilated, the windows are often rotten and wont open,[*] and when occupied by a family, the washing is hung in them to dry.

There is much over-crowding in the small shops, Mr. Burnett (Labor Correspondent of the Board of Trade) says, that rooms not over nine or ten feet square will contain six, eight, ten, or even twelve workers, and gas burning besides. Here again the larger the shop the better the conditions are apt to be. The lowest allowance of air space that I have found, testified to by a physician, is 160 cubic feet,[*] by a factory inspector 130 cubic feet, to the person. The crowding is worse in the boot trade, in London, and the work-rooms in that trade are often in the cellar.

In regard to the results of these hygienic conditions upon the physique of the workers, there is but little direct evidence. Some evidence is given, for instance, of the high infant mortality and the low general vitality of the iron workers in the Cradley district. How far these results are due to the system under which they work, and how far due simply to the lack of nourishment and care which comes from their poverty pure and simple, is a question that was not gone into in taking the evidence. I suppose it is from the nature of the case practically impossible to separate the two causes, so as to be able to say such a result, or such a part of a result, is due to the one or the other. We have the evidence of certain of the workers that the system of work does deteriorate their physique, and of one of the employers that it does not. There is some evidence that the Jews at least are not deteriorating in physique, but on the contrary are improving.[*] The best direct evidence we have, upon this point in the report, is to be found in the testimony, chiefly of medical experts, in regard to consumption caused by working in the over-crowded shops and in an atmosphere which is often full of steam from the use of hot irons in pressing.[*]

So much for the direct evidence as to the actual observed results. But owing to the difficulty already mentioned, of isolating the different conditions found in these industries, any of which might be supposed to have a tendency to produce physical deterioration, we must rely chiefly upon the testimony of experts as to which of such existing conditions must necessarily or very probably, be injurious. In order that our experts, the physicians, may form such an opinion, it is necessary they should know exactly what the conditions are. I have above given the best short account I can of the conditions found in London. I will now quote some of what Dr. Daniel, of New York, told us in regard to the conditions obtaining in that city.

Dr. Daniel's paper is one which deserves to be read entire. It is a concise statement of the facts observed by a dispensary physician in New York, and noted down by her from day to day, on blanks printed for the purpose, and is incapable of condensation. When I was looking for speakers who should speak with authority and knowledge upon the most important phenomena in connection with this subject, in America, I spent about a week in Washington, Philadelphia and New York making inquiries. In New York almost everybody I asked told me that if I could get Dr. Daniel I should have the best authority upon the subject in that city, and I believe that to be the case.

In beginning her address Dr. Daniel said :

"Permit me to call your attention to a class of tenement house-workers who are never visited by the factory inspectors, whose hours are limited only by their physical strength and the amount of work they can obtain, who pay for the rent, light and heating of their workshops, who eat, sleep, are sick and die in the same rooms in which they manufacture goods in whole or in part, these goods to be sold in Broadway shops as well as other shops in and out of New York city.

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[*] 17,413. Dr. Squire's testimony.

[†] 17,404-13. Dr. Squire's testimony.

[‡] See, for instance, Miss Beatrice Potter, in Charles Booth's "*Labor and Life of the People*," Vol. 1., p. 324.

[§] See the Lancet, Vol. 1, p. 175, and in the report the testimony of Drs. Squire and Bate, 17,386,599 and 31-, 876,599.

Where child labor includes all the children in the family from three to fourteen years of age, their hours of labor limited like their mothers' only by the amount of work on hand and their physical strength, children who stop their work only for a drink of black coffee and to eat a piece of bread, or to quiet a crying baby, or to carry the heavy bundles of work to and from the shop, children who have no childhood, children whom the law makes no effort to protect, who live only to work.

" Women whose only object in life is to earn money enough to pay the rent and keep themselves and children from starving."

Then followed a description of tenement houses that ought to be read.

The selection of cases reported upon in this paper was as follows:

"From December 1, 1891, to August 1, 1892," said Dr. Daniel, "as outdoor visiting physician for the New York Infirmary for Women and Children, I have been called to 153 families, in each of which a woman earns the whole or a part of the family income, in rooms which are also occupied as family living rooms. These families include only those women who work continually during the season, not occasional workers."

In regard to the sanitary condition of the houses of these women who were engaged in some sort of manufacture, we were told:

"The sanitary conditions under which these people live, the tenement house and the individual apartment, I have classed as Good, Moderately Good, and Bad."

A good tenement house is one that is clean, well lighted and ventilated; halls light, the plumbing in good order; sinks and closets free from odor; the house in good repair.

Moderately good:—

In which the plumbing is more or less out of order, neither good ventilation nor light, but the house otherwise in good repair and clean.

Bad:—

In which the house is out of repair, ventilation not good, halls dark, too closely crowded against neighboring houses, house dirty, that is, the halls, stairs and yards.

Of the first class we found one solitary example. This, a corner house, very nearly approaches a model tenement.

Of the second class we found twenty-eight.

Of the third class we found forty-eight.

The sanitary conditions of the tenement house is directly due to the owner, under the supervision of the Board of Health. Hence, instead of finding one family living in a tenement house in good condition, we should have found seventy-seven.

The same classification can be made of the sanitary conditions of the individual apartments.

Good apartments consist of rooms well lighted and ventilated, with no odor from sinks, clean, not over-crowded.

Moderately good when the plumbing and ventilation are good, the rooms clean but over-crowded and not well lighted.

Bad: Over crowded, dirty, dark rooms, plumbing out of order, ventilation and light bad.

The dirt and over crowding of the apartments are directly traceable to the tenants; the plumbing, lighting and ventilation to the landlord and Health Board. In justice to these people whom we are discussing it must be remembered that our observations were all made during the illness of one or more members of the family, and the cleanliness of the apartments might have been different had there been no sickness present. This fact, however, does not affect the conditions of the plumbing, lighting or ventilation of the apartments. The over crowding is partly the fault of the owners and Health Board.

One family was found living in good sanitary apartments; twenty-seven families live in moderately good apartments; forty-nine families in bad apartments. Fifty-eight families live in front houses; nineteen in rear houses.

The total number of rooms occupied by the seventy-seven families are 212; the total number of light rooms, 168; total number of persons, 509. The number of rooms comprising an apartment and occupied by one family is as follows:

4 families each live in 1 room.
32 " " " " 2 "
24 " " " " 3 "
14 " " " " 4 "
2 " " " " 5 "
1 " " " " 6 "

Dr. Daniel then gave an account of the custom of keeping boarders which prevails so largely among these people. One family takes actually fifteen boarders; two others take nine each and many others take smaller numbers.

The contagious diseases found among the children of the seventy-seven families visited by Dr. Daniel, engaged in manufacturing pursuits, were the following:

Measles	20
Scarlet Fever	7
Typhoid Fever	3
Spotted Fever	1

These patients were not all isolated; the clothing manufactured was laid upon the lounge or bed with the patients; none of it was fumigated. We have repeatedly tried to trace clothing manufactured, to ascertain if possible whether any person contracted the diseases from clothing manufactured in these rooms. Most of these people manufacture for middlemen, these men having only a small shop, the goods being sent at once to the owners. These people are densely ignorant, often not knowing for whom they work. "John" or "Caroline" in Orchard, or some other street, gives them the work. The children go after the work and return it when completed. The little blank book furnished by the employer usually contains no address—just why I have never been able to find out. However, we sometimes find fashionable clothing houses having their work done in tenement houses. The work is rarely custom work.

Special attention was called to a new and hitherto little spoken of class of workers:

"I wish briefly to call your attention to the laundresses. I add them as their occupation is a constant menace to the public health. Soiled linen is carried through the street, in the horse-cars, in baskets and bundles. I have been able to trace contagious diseases from families in which children are ill to the children of the laundress, through the soiled linen. A recent illustration: Within the past year a laundress washed the clothes for a child sick with scarlet fever; her two children contracted the disease, one of whom nearly lost her life; the children in three other families in the house contracted the disease from the laundress' children. Although the woman continued at her work she did not, as far as I could ascertain, carry the disease to any of her customers. Clothing after being washed and before it is ironed is laid on the bed or lounge by the child sick with a contagious disease, or a towel belonging to some other family is handed to the physician to use as a chest cloth, thus becoming a vehicle for contagion.

Laundry work in a tenement house means a constant fire, making the rooms unbearably hot in summer; in the winter the constant opening of the windows during the time the clothes are being hung on the line create constant draughts of cold air in the room; the steam in the little rooms, the tubs occupying a large part of the room; often the water must be pumped the night before or very early in the morning; often the clothes are hung on the roof and must be carried up one or more flights of stairs; their hours are limited only by the amount of work they can obtain; their wages from thirty cents to one dollar per dozen pieces."

Even the laundresses take either boarders or lodgers, sixteen of them taking forty-four boarders among them.

Much of the paper was devoted to the subject of child labor, carried on as it is in direct violation of the State Factory Law, "which prohibits children under fourteen years of age from working in any factory in the State. The responsibility for this violation of the law is entirely due to the carelessness or deliberate fault of the chief factory inspector and his deputies. The factory law calls the employment of children under fourteen years of age a misdemeanor and provides certain punishment when the law is disobeyed. A deputy factory inspector stated to me that when children under fourteen years of age were found working in factories she investigated the circumstances, and if in her opinion the child's wages were needed at home she allowed the child to continue at work in the factory. The chief factory inspector at Albany last winter said exacly the same thing. The factory law gives neither chief or deputy discriminating power as to the age at which children are allowed to work in factories. We in New York State do not need new factory laws, but new factory inspectors.

The diseases found among the seventy-six families attended and their children were as follows:

24 cases of measles,
9 " " scarlet fever,
3 " " erysipelas,
2 " " consumption,

with a mortality of eight. That every precaution should be taken to prevent the spread of contagious disease is emphasized by the fact that in the year 1891 there died in New York 1,220 persons of scarlet fever and 1,663 from measles. There is obviously much more danger to the community when goods are manufactured or clothing laundered in rooms containing patients ill with a contagious disease. The Board of Health has power to prohibit work of all kinds during the presence of an infectious disease; the physician attending a person ill with a contagious disease is bound by the law to report it to the Health Board within twenty-four hours of the first visit, yet in no instance among the cases cited in this paper was work suspended by the health officers. A recent protest circulated by the Reform Club proves that the Board of Health in New York City is simply a political machine."

In conclusion, Dr. Daniel answered certain questions which I had addressed to her. Some of these questions and answers were as follows:

"Are the children becoming stunted, showing the effect of overwork of the parents?"

"Under three years of age the children present marked symptoms of the disease called rachitis, due to malnutrition from under feeding and bad sanitary surroundings. From three to fourteen or sixteen years the children are bright and, as you have seen, capable of competing with their elders as bread winners. From sixteen years and over their occupations are that of unskilled labor, and their capacity for earning money remains about what it was at sixteen or eighteen years. I speak only of the same class of people as our 153."

"Of the presence of contagious disease in rooms where goods are manufactured, was there danger of infection? If possible, give an instance of such infection."

"Most assuredly there was danger of infection in every case. I have no recent example. An instance, however, I recall which occurred a few years ago; in a 'sweater's' family to whom I was called occurred three cases of scarlet fever. Two women employed by him in the shop, and who also carried work to their homes to finish, asked me to attend their children, also ill with scarlet fever, a few days after its appearance in the sweater's family. It is almost impossible to trace this clothing after it leaves the tenement houses. I am constantly studying this question, but when the women do not know for whom they work, and often not even the street or number, it seems nearly impossible."

The paper by Dr. Hicks, of the Boston Board of Health, was too general in its character for my present purpose. It presented a more favorable showing in regard to tenement house workshops in Boston than is in accordance with the public impression. The latter, however, is a great deal affected by that overestimate of the damaging nature of the evidence furnished by a bad smell which is always such a factor in forming the popular judgment upon this subject.

The argument of which the greatest use has been made in the agitation against the sweating system has been that infection has been carried from house to house in the clothing made in tenement houses. I think the danger has been very much exaggerated. I have read, I believe, every scrap of evidence upon this point in the House of Lords Report, and have made some search through the medical journals for testimony of the same sort. I find but one case in which it is definitely stated that disease has been carried in that way,—the case of the daughter of Sir Robert Peel.* But the garment in that case was a riding habit, and was, therefore, probably made by the very highest class labor, not what would usually be classed as "sweated" labor.

The absence of definite knowledge that disease has been carried in given cases is not of course by any means strong evidence that disease has not been so carried. To quote the words of Theodore Thompson, M.B., Medical Officer of Health for Sheffield.‡ "I have never been able to trace a case definitely to any of these places of infection occurring (sic). That is a very difficult matter to do. For instance, in the large epidemic of small pox in Sheffield, it would have been practically impossible to say that this bit of cloth was infected and gave rise to such a case somewhere else, because the sources of infection were so widely spread that it would have been, scientifically speaking, impossible to say such a thing as that, but what I did find, in two or three cases, was the existence of small pox in houses where such work was carried on and no precaution taken to prevent the clothing from being contaminated with small pox infection."

There is a great deal of evidence that there has been disease in the places where clothing was made and of course where that is the case there is danger of the disease being carried unless the sanitary authorities have notice of the danger and disinfect the clothing.

Every young doctor, I am informed, goes through each disease as he studies it, and the public undergoes somewhat the same experience when it learns of a single source of danger among the thousands to which it is exposed every day. The danger which we incur in riding in horse cars is probably ten times as great as that arising from the manufacture of clothing in tenement houses in cities where there is an efficient Board of Health with due powers of inspection, and for taking precautionary measures. Those who write upon the subject are very apt to assume that the mere presence of dirt and bad smells in itself makes a room a dangerous place in which to have clothing manufactured, but I am informed on excellent medical authority that the danger is absolutely none where there is no actual disease.*

It may seem hazardous for a layman to venture an opinion upon such a subject before such an audience, but nevertheless I venture to state my conclusion in the matter for what it may be worth. It is that given a thorough system of notification, and reasonable precaution by the Board of Health, the remaining danger seems to be insufficient to bear much weight as an argument against a system of home industry.

The strong argument in the case is that derived from considerations as to the effect of bad hygienic conditions on the physique of the workers and their children. Of the due weight of that argument at any given time and place it is chiefly for the members of the the medical profession to judge.

JOSEPH LEE, *Secretary.*

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† *The Lancet*, I, 175, London, 1876.

† 29,013.

‡ Mr. Schloss writes to me August 25, 1892:

"I am an official member, appointed by the government, of the Metropolitan Asylums Board, the public authority dealing in infectious diseases in London, and have been since 1887. At this moment we have a small pox epidemic and I am on the committee of small pox hospitals, which I visit, inquiring into the sources of the disease. So far I have not traced a single case to the sweating system. In our last great fever epidemic, the districts where the tailors work under the sweating system were just the least affected."

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COMMUNICATIONS

Cholera and The Columbian Exposition.

BY S. T. DAVIS, M.D.,

Of Lancaster, Pa., President of the State Board of Health of Pennsylvania.

PERMIT me, through the columns of your valuable journal, to suggest a few important topics for Sanitarians of America to think about pertaining to the Columbian Exposition, to be held at Chicago, Ill., during the summer of 1893:

(1) Shall the exhibition go on, notwithstanding a tidal wave of cholera germs has touched our shores?

(2) Has, or has not, the history of all cholera epidemics proven that the disease germs hibernated during the winter following the first summer, and were hatched out as lively as ever the second season?

(3) Is it an established fact that the comma-bacillus or cholera germ can be packed away, apparently harmless, and set free a violent poison months afterwards, if placed under favorable circumstances or conditions?

(4) Can the United States feel perfectly safe in accepting, in the early spring and during the winter, goods of all descriptions, from Hamburg, Vienna, St. Petersburg and other cholera-stricken countries, concentrate them in Chicago, and invite the world to there assemble during the hottest months of the year?

These important questions might be extended indefinitely, but time forbids. I merely open the grave questions, trusting that those, whose business it is to look after and protect the public health, will take up the subject and discuss it at length.

The Humor of Sanitation.

It is not often that one notes anything particularly funny about matters hygienic, hence is it somewhat provocative of a refreshing smile to read in the *Leeds Mercury* that some one seriously proposes to purify the River Thames by importing a school of crocodiles to act as river scavengers.

Public Sanitary Aid Indispensable to the General Health.[*]

BY HOWARD S. ANDERS, M.D., M.A.,
Instructor in Clinical Medicine, Medico-Chirurgical College, Philadelphia.

IT is a rare occasion, this, for a physician to treat so many *patients* at the same time, and, doubtless, to do so in a strictly medical manner, would be followed by very rare results.

The facetious remark sometimes made, that the preacher preaches what he does not practice, and the doctor practices what he does not preach, is doubly false, exceptional and mischievous. It cannot be truly gainsaid, however, that upon public health matters the doctor might well be more of a preacher than custom would seem to have allowed. Indeed, the impression is fast taking hold of both professional and lay members of society that we cannot attain success in general sanitation unless the intelligence, active interest and unified efforts of the people are solicited by the medical scientist and practical sanitarian to aid them in this vital and momentous work.

But the response is gradually coming. "Health talks," sanitary lectures and press articles have a more prevalent, popular interest, and are often of incalculable worth to those who are largely responsible for the sanitary condition of an household, manufactory, auditorium, hospital or thoroughfare, but who may be ignorant or regardless of the principles of hygiene. The scholarly poet, Lowell, has said: "No man is born into this world whose work is not born with him;" and while we cannot all be professional sanitarians, it needs no argument to show the universal loftiness of the duty involved in the preservation of our health.

Man is a social animal, dependent upon, and co-operative with, his fellow. Wherever people congregate to live, the perversity of human nature is such that some persons are found who are careless not only of their own bodily welfare, but, by reason of this very social law, careless of that of their neighbors. The unhygienic individual thus becomes a menace to public health, and the nucleus of an unsanitary community.

Do I hear the misguided and—so-called—*independent*, social autocrat exclaim, "This is a free country, and I am at liberty to do just as I please?" Yes, my friend, you are—just so long as you do not interfere with the liberty of those around you. The Golden Rule is a better guide for the maintenance of the public health than are all the dogmas of Anarchy; and until this rule is practically exceptionless, we cannot hope to be quite safe without the framing, enactment and enforcement of proper sanitary laws. I quote the words of a distinguished sanitary official:[†] "Private or personal hygiene is good, but it is entirely inadequate to prevent any of those diseases which now cause most deaths. . . . . For protection against the dangerous communicable diseases the general co-operation of all classes of people is essential. Each person is so continuously exposed, directly and indirectly, to other persons in all ranks of life, that no person can live to himself alone; the safety of each is bound up with the safety of others, so that each individual has a vital interest in the general health and in general and special measures for the safety of the public health."

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[*] Master of Arts Address, Commencement of the Philadelphia Central High School, Chestnut Street Opera House, June 30, 1892.

Dr. Henry B. Baker, article "General Sanitation," Hare's "System of Therapeutics," vol. i.

I am not aware of any stereotyped form of Master's address—I could not compilate one if I would; and I would not, if I could, deliver one. I speak now simply as one of those who believe that the greatest sanitary benefits to the greatest number are to be derived from a clear knowledge and rigid avoidance of the evils which beset and endanger the health and lives of the people as a whole, as well as from a high appreciation and intelligent conservation of the healthful forces which it has pleased Providence to bestow upon Nature to distribute, and upon humanity to make use of. In looking about me, then, for a subject upon which to address you, I felt that I could do no better than to try to throw out some suggestions regarding that which is, professionally, nearest and dearest to my heart, namely, the public health. I do but wish to hint at the fallacies and dangers of ignorance, indifference, prejudice and mere sentiment in sanitary matters, in which the public is concerned, and consequently, what is of vital import to each one of us, who go to make up the public in any community.

Life is as *essentially* a mystery as it ever was. What concerns us most is, that it is a "stern reality." To sustain and enjoy it are our constant aims and efforts; although these vary as do individuals. Is it strange, then, that self-preservation is the first law of organic life? An instinct of the beast we know it to be; that in man it is no less a propensity, is equally apparent. But, upon the state of the health depends the expectation and prolongation of life, and what jeopardizes the one, diminishes the other. So that, as the ages rolled along, what was in primitive and barbaric man scarcely more than a cultivated instinct, by a series of gradations became a faculty, a study, a duty of man to man, to God, as well as to himself.

To advance properly in any pursuit of human affairs, we must, if possible, know first all that pertains to it, and then apply the knowledge gained, according to our best abilities. If, then, public aid is indispenable to the general health —a most vital matter—should we not emphasize the two-fold fact that the public mind must be educated in sanitary principles before it can intelligently and willingly co-operate in practicing them? Our theme would resolve itself, therefore, into the questions: first, what do we know which affects the health of the people; second, what can we do to perfect the health of the people?

Time and the occasion make it irrelevant to mention, even, all the hygienic and sanitary principles and their application, the problems and their solution in practice, which confront the thinking, moving public; still more to answer these questions explicitly. If we will but recognize fully the "crying evils" of the present which affect the people's health, and a few of which I shall refer to briefly, there will be, I am sure, no doubt as to what trend of concerted public action is at least indicated.

In the apt words of Parkes, practical hygiene "aims at rendering growth more perfect, decay less rapid, life more vigorous, death more remote." But we have not learned to accomplish all that is aimed for, mainly because of the imperfection of the collateral sciences. And we have not a little to unlearn, because of the superficial knowledge and sentimental narrowness which cloud the truth and retard rapid progress. We are advancing, nevertheless; medical science was never more completely specialized, sound and active than it now is; trained nursing—that noble auxiliary profession of women; an awakening public interest in health information and the demand for urgent sanitary legislation; more efficient health officers; the endeavors to create a national health service, with a cabinet officer as its executive head,—all contribute to place genuine hope, at least, foremost among the expressions of the observant.

We are making headway in this city. Indeed, are we not clamoring for a *New Philadelphia?* Have you not noticed that many of the municipal improvements in demand by the public are such as concern its health? And sanitary science, alone, "forms the basis for intelligent and successful public health administration."

In the great departments of human thought and action what constitute true power and progress? Why, educational development, organization and co-operation. The physician and sanitarian plead to the laity for no more—no less—in its health matters. The end will surely justify the means.

Perhaps the most prominent danger to the general health, and one which is too little regarded by the masses, is *filth.* We can never fear being over-educated on the subject of filth. We cannot be too clean. The good old saying, "Cleanliness is next to godliness," will last as long as dirt lasts. The importance of recognizing that the most virulent diseases are "filth diseases," cannot be overrated. Diphtheria, typhoid fever, malignant pustule, cholera, erysipelas, scarlatina,—the mere mention of them strikes terror to the heart of many, and awakens sorrowful remembrances of loved ones who have passed away. The specific germs of these diseases find a rich soil in filth.

Modern sanitation has a scientific basis in the established "germ theory" of some diseases. And it is well to realize that these microscopic organisms lurk under finger-nails, in wrinkles, the hair, clothing—everywhere. Some of these microbes cause inflammation and abscesses, and hence the modern surgeon tries to keep wounds aseptic, or free from germs, by practising antiseptic, or germ-destroying surgery, which you sometimes read of in the newspapers, and for the substantial furtherance of which we owe so much to the late Dr. Agnew. Cleanliness is, then, ordinarily speaking, an aim of sanitation in dealing with filth, and is to be discriminated from surgical cleanliness, which deals more directly with micro-organisms. Indeed, the most carefully washed hands of the most scrupulous woman would not suffice in cleanliness for the antiseptic surgeon, preparatory to an operation, where the infection of fresh wounds becomes so easy. But it is not expected that in every day life we could or should wash our hands in germicidal solutions. The comparative importance of absolute ordinary cleanliness is simply emphasized. Not for you my friends, the task to discover the disease-engendering germ; but to seek out the filth which harbors and sustains its life. Not yours, the skill to hunt the saucy and prolific bacillus with chemical reagent, microscope and battery, to study its virulence with culture and inoculation experiments; but with quick, discerning eye and ready hand to exercise the broom and scrubbing-brush, the water and disinfectant; to cremate and aërate as never before; and, in the words of Dr. Holmes: "It will soon become as embarrassing to say, 'I have just recovered from an attack of typhoid,' as to say, 'I am just getting rid of the itch.' As the family was the unit that perpetuated and exterminated the itch, so is the community the unit that perpetuates and must exterminate the filth-diseases."

"House cleaning," as Habberton popularly comments, "is a very dirty and wholly enraging operation, but woman is going to have things clean, no matter who may suffer by it, and if a man doesn't like it, the best thing he can do is to turn in and help the operation along as rapidly as possible." A crisp and sensible observation. Hygiene begins at home, like charity, and makes every householder the responsible sanitarian of his or her own premises.

Women can often do more at home than some men can abroad. But a woman's influence may be valuable also, indirectly, in public health affairs, as in the Persian manner, for instance. According to the Hon. S. G. W. Benjamin, late minister to Persia, if a man there wishes to influence another in affairs of importance, he confides the subject to his wife, who, in turn, manages to bring it to the notice of the wife of the man to be influenced. Of course, there is the inducement of a handsome present, in Eastern style; but Oriental bribery is far inferior to an American woman's tact.

There are so many public health questions which call for the untrammelled co operation and trained vigilance of all, that I pass on to view several of those which have a more prevailing popular interest. I need but point to United States Senator Paddock's Pure Food Bill, which deserves the support of all right-thinking citizens; to the closely-built city districts, where hundreds of the honest and industrious poor are shut out from sunlight and fresh air, in order that a tenement-owner's gilded mansion may be filled with bric-à-brac; to the dread disease which lurks in the expectorations of consumptives, in our streets and public conveyances. Need I urge the evident necessity of numerous city parks in our thickly populated sections; and of clean, wide, unobstructed, tree-lined streets? We are proud of Philadelphia as the "City of Homes"—it should be, likewise, a city of well-kept streets. Home air will not be pure, if its supply of street air be contaminated.

May I remind you of the urgency of the imperative *practice* of school hygiene, as well as its *teaching?* And that the direful effects of tobacco and alcohol upon growing youth are scarcely less dreadful than those evidences of physical deterioration, which has its inception in the mental overstrain and unsanitary class-rooms of some of our schools; and in the "systematic cramming and high-pressure graded studies which leave low-pressure bodies," and, I may add, bankrupt nervous systems.

The battle against the disease microbes is a serious one; but when scheming, mercenary and unscrupulous human agencies threaten the general health, the case takes on all the gravity that trifling with human life entails. Do we realize fully the hazards contained in the affected learning, the flagrant arrogance and duplicity of the various *pathies*, *isms*, patent-medicine cure-alls, and Keely institute sensations? The rival blood-purifiers which "bloom in the spring" at cut rates; the *pure vegetable* (?) bitters, with 40 *per cent.* of alcohol, —explains, in part, the great demand for such proprietary articles, which constitute the most insidious "speak-easies" that thrive, unhindered by justice. Then there are the cough syrups—guaranteed to be harmless—yet often containing opium or morphine in unknown quantity. Is it any wonder that ghastly, suicidal habituès stalk abroad in increasing numbers?

Is the current remark, that we Americans are the most easily humbugged, true? Is this "buying the cat in the bag,"—this wholesale swallowing of preparations, the ingredients of which, or their quantities per dose, the public know absolutely nothing, an indication that Yankee shrewdness and common sense are on the verge of extinction? Or, have we to deal with a cosmopolitan indifference and educated narrowness; a popular distrust for scientific medicine, and a traditional belief in "magic short-cuts" to health? I hope not. True, America is the "land of the free;" but is it not high time that we cease to be the *free dumping-ground* for the quackery and medical frauds which were ridiculed out of Europe, or which would not be tolerated there? What is to be done, pray? Are the people aware of the menacing enormity of these things, and will they rise with consummate unanimity, demand a halt and sweep them into the illegitimacy and disgrace which they deserve? Take away the public support and they fall. Let the army of the masses be officered by the "five great P's; the Press, the Pulpit, the Platform, the Parlor, the Police."

In closing this list, let me ask, how long must we tolerate the evils of "baby-farming?" And do some women fail to see that in trailing their street-dresses through the "unspeakable and infectious filth," they are conveying its nastiness and disease-breeding particles into our houses, churches and theatres? I know this is not a fashionable remark to make, but then, fashion and preventive medicine seldom do agree.

Are we going to have the proposed deadly, overhead trolley-wires? Not, if recent popular and judicial demonstrations have any practical restraining force. It certainly becomes a most difficult problem for the sanitarian to point out the way to avoid an overhanging thunder-bolt, the measure of whose evil possibilities is not less than the number of people and property possessions—their lives and integrity—that would be endangered wherever the trolley-cars should run. The true way to avoid them is not to have them. The hygienic "ounce of prevention" is of supreme moment to Philadelphians.

Young gentlemen of the graduating class: your professor of physiology and hygiene has taught you the cardinal principles of healthful life. Not many years hence you will have arrived, I trust, to the age of your majority and citizenship, with the prerogative and honor which it is the highest duty and privilege of an American freeman to exercise—the right to vote. May I ask you to live as you have learned? To vote for all that shall promote the general health; for progressive sanitary laws; and to assist in the working of hygienic truths which you can intelligently and conscientiously vouch for? Montesquieu said: "If we want our liberal institutions to endure, we must have in men's hearts that love of *public* interest which alone can combat and overcome private interest, and lead men to *take time* to attend to the duties of citizenship."

Yes, the public is obligated to itself through an individual responsibility, to aid in lifting from their physical degradation, the ignorant and careless; to help reveal the dangers of unsanitary living—the delights of a contrasted life. Observing the carelessness of some, one would think that, unlike the Utopians, they would rather be drugged than avoid disease; or be narcotized into ease with anodynes, rather than shun the causes of pain. The too common popular sentiment that all a physician has to do is to prescribe indicated remedies, is equalled in fallacy by the suicidal notion that he, only, needs to be versed in sanitary knowledge. The medical profession is, also, the index hand which points to the road of health along which the public are invited to travel. The struggle for life is at best a "survival of the fittest;" and the more of the fittest, the better, stronger, nobler and more God-like will be the generations to come.

We Philadelphians boast of constituting the "good Quaker City." Thoreau suggests: "Be not simply good, be good for something." We have, however, been good for some advances. There are not a few wide-awake people—*New Philadelphia* people—who have devoted at least a portion of their lives, either actively or indirectly, to the health and well-being of society at large. There are those who do not let their talents and energy, their mental training and working capacity lie dormant, to waste their lives as a muscle atrophies when unused, and to whom, in Kingsley's lines, "The highest reward for having wrought well already, is to have more to do."

But, again, we meet those lukewarm, indifferent, mediocre persons, who, knowing better, "don't care" to trouble themselves about the health of others, so long as their own healths do not suffer. To such I feel like saying as, in public debate, Abraham Lincoln replied to, then Senator Douglas, who said he did not *care* whether slavery prevailed or not: "But God cares; humanity cares; *I care;* and *you ought to care.*

Finally, there are a *select* few whose greatest aim in life is, apparently, to oppose any- and everything, meriting and unmerited, simply for the sake of protesting with their conceited arrogance—chronic objectors, they, with the intelligence, energy and brilliancy of an oyster. To them—well, I throw down no gauntlet; I place no chip on my shoulder. I pass them by as specimens of the survival of the *unfit.*

In conclusion, let me say that while the words of this address may be nothing, the drift of it—everything; that the furtherance of sanitation is decidedly dependent upon the personal intelligence and efforts of the masses of the people. It is the concern not only of one man, or of his family, but of all his neighbors as well. Let us assimilate the vital importance of this fact. The trouble may be with us; it may be with our neighbors, and if not, we may it least shed a beacon light to them. Were all to take proper care of themselves, and adapt themselves healthfully and charitably according to their environments, the public would then, naturally, take care of itself. Hygienically, it is the one-man power of all which is the public power. It is not what one man can do, nor a company of men—it is what you, *you* can do, if you will.

> "We live in deeds, not years; in thoughts, not breaths;
> In feelings, not in figures on a dial."

I repeat, grounded in a sanitary education, stimulated by the highest motives of Christian philanthropy, what we need, ladies and gentlemen, is *action; individual action*, *co-operative action;* the utility, the nobility and eloquence of of action. The individual sanitary beneficence of all will then become the sanitary beneficence and general welfare of the people.

1836 WALLACE STREET, PHILA.

The History and Historical Sketch of Modern Cremation in England.

BY SIR HENRY THOMPSON,
Of London, England.

(Concluded from page 531.)

RETURNING to the history of our own society, at a time when it was probable that active operations might once more be resumed. In 1882 the council was requested by Captain Hanham, Blandford, Dorsetshire, to undertake the cremation of two deceased members of his family, who had left express instructions to that effect. The Home Secretary of that day being applied to, reiterated objections which had been made three years before, and the society was unable to comply. The bodies had been preserved for some years in a mausoleum on the estate, pending a favorable solution of the difficulty. This failing, Captain Hanham took leave to erect a crematorium there, and to carry out the wishes of his relatives, and did so with complete success. This was in October, 1882. He himself dying about a year later, was cremated on the same spot at his desire by a relative. The government meantime made no sign; no notice, in fact, was taken of the proceeding by any authority, although the occurrence was described in the public journals, and excited much comment. But in the following year a cremation took place in Wales on the body of a child, on which the ceremony was performed by the father in defiance of the coroner's authority, and legal proceedings were taken against him in consequence. The result was that in February, 1884, Mr. Justice Stephen, the case having come before him at the assizes, delivered his well-known judgment, declaring that cremation is a legal procedure provided it be effected without nuisance to others. The council of the English society now decided on offering facilities for performing it, and to place their crematorium at the service of the public for practical use; having first carefully considered the best means of taking precautions to prevent the destruction of a body which might have met death by unfair means.

Only two months later, on the 30th of April, 1884, Dr. Cameron, the member for Glasgow, and one of the council of our society, brought a bill into the House of Commons "to provide for the regulation of cremation and other modes of disposal of the dead." He proposed to make burial illegal without medical certificate, excepting for the present certain thinly populated and remote districts. No crematory to be used until approved and licensed by the Secretary of State; no body to be burned except at a licensed place, in accordance with regulations to be made by the Secretary of State. Two medical certificates to be necessary in the case of cremation, and if the cause of death cannot be certified an inquest by the coroner shall be held. Dr. Cameron supported the proposals by an amount of evidence of various kinds which amply warranted the course he had taken.

It was at this juncture that the English society issued a public notice, formulating certain conditions on which they would undertake to employ the crematorium at Woking. They stated that great care and absolute compliance with their conditions were necessary, because "they are aware the chief practical objection which can be urged against the employment of cremation consists in the opportunity which it offers, apart from such precautions, for removing the traces of poison or other injury which are retained by an undestroyed body."

These conditions were expressed in the following terms:

(1) An application in writing must be made by the executors or nearest relative of the deceased—unless it has been made in writing by the deceased person himself during life—stating that the deceased expressed no objection to be cremated after death. They must furnish the name of the medical man who has attended the deceased, in order that he may receive an official communication from the secretary before certifying.

(2) A certificate must be sent by a qualified medical man, who, having attended the deceased until the time of death, can state without hesitation that the cause of death was natural, and what that cause was. Another qualified medical man, if possible a resident in the immediate neighborhood of the deceased, is also required to certify, after independently examining the facts within his reach, that to the best of his belief the death was due to natural causes.

To each of these gentlemen is to be forwarded, before certifying, a letter of "instructions" marked "private," signed by the president of the society, calling special attention to the important nature of the service required.

3. If no medical man attended during the illness, an autopsy must be

made by a medical officer appointed by the society, or the cremation cannot take place; unless a coroner's inquest has been held, and has determined the cause of death to be natural. These conditions being fulfilled, the council of the society still reserve the right in all cases of refusing permission for the performance of cremation if they think it desirable to do so.

Public attention had thus been called to the subject; and the Woking crematory was used for the first time on the 20th of March, 1885, two other cremations following in the course of the year. During 1886, ten bodies were burned, five male and five female, one of them that of a Brahmin. During 1887, thirteen bodies were burned, one only being that of a female. During 1888, twenty-eight bodies were burned, fifteen being female. During 1889, forty-six bodies were burned, nineteen being female. During 1890, fifty-four bodies were burned, twenty-one being female; and during the first twelve weeks of 1891, twenty-three bodies were burned, seven being female; a total since the beginning, of one hundred and seventy-seven cremations.

The complete incineration is accomplished by this apparatus without escape of smoke or other offensive product, and with extreme ease and rapidity. The ashes, which weigh about three or four pounds, are placed at the disposal of the friends, in order to be removed. A vase of pottery, modelled after an ancient Roman cinerary urn, is provided for the purpose without charge. This may be buried in the grounds of the crematorium, in a spot set apart, maintained and marked by a stone for a long term of years, on payment of a trifling fee. Or a niche in the hall of the crematorium may be secured on condition which can be learned on application at the offices of the society. A large number of such cells or recesses, each capable of receiving an ornamental urn or sarcophagus, will be constructed in a cloister, which it is proposed shortly to build for the express purpose of providing a suitable receptacle for such deposits. Or, if desired, the ashes may be restored at once to the soil, being now completely innocuous, if that mode of dealing with them is preferred. One friend of the deceased may be present at the cremation, if written permission is first obtained from the honorary secretary of the society.

Practically, what takes place when an application for cremation has been made is as follows:

Evidence from the medical attendant of the deceased, as well as that of another and independent medical man, is obtained in writing. Their attention is called by letter to the importance of an inquiry respecting poison or violence as a cause of death. The forms containing it are in every case submitted to the president of the society, who, acting on behalf of the council, decides whether or not the cremation may take place. The papers being approved, the undertaker can remove the body in a hearse from any house or station within the four-mile radius from Charing Cross to the society's cemetery at Woking for a reasonable fixed sum. Or he can arrange for its transport, together with that of any number of friends and attendants desired, by rail, direct from Waterloo Station to Woking.

It is strongly recommended to all applicants that no large, heavy or ornamental coffins should be employed for the purpose, but, on the contrary, only a thin, light, pine shell; as in the former case cremation cannot take place without removing the body, and in the latter there is no necessity to do so, and accordingly the practice is to burn the whole together.

But, after a considerable experience of cremation both here and abroad, I do not hesitate to say that I greatly prefer the plan of completely enveloping the body (already habited in the ordinary shroud) in a long narrow sheet, say ten feet by five, previously placed lengthways over a simple empty shell. The last act before finally closing the shell should be that of folding the sides of the sheet across the body, one overlapping the other, so as to cover it entirely. Thus the folded ends of the sheet will extend some two feet or so above and below the head and feet of the body respectively. Above each of these points, a piece of stout white tape or white web should be firmly tied round the folded sheet, and in two places round the covered body also, so as to maintain the sheet in its place. These ends are then turned over toward each other into the shell before the lid is adjusted and fastened. Immediately before the act of cremation commences, the shell should be opened, the body be carefully and reverently lifted out of the shell by a bearer at each end of the sheet, a third supporting the centre, and be placed on the frame which enters the crematorium. By this means the ashes of the body are not mixed with those of the shell, which must necessarily be the case if both are burned together, requiring a tedious and somewhat imperfect procedure to separate them. Moreover, the wood hinders and prolongs the work of cremation proper. The sheet may be made of cotton, linen or wool, but the latter is preferable, because its constituents are largely dissipated in combustion, whereas the vegetable fibre yields and leaves a large quantity of carbon in the form of ash. In the draught of a powerful furnace, some of this fine matter is no doubt carried away.

The charge made by the society for effecting cremation is moderate, and will be made less when the demand has considerably increased. At present the entire apparatus has to be put into action for a single cremation, involving an amount of labor and expenditure which would be only slightly exceeded for three or four repetitions of the process, if they occurred during a single day.

About four years ago, the council made public the following resolution, in the form of a "minute of council," which, after due consideration, had been passed: "In the event of any person desiring, during life, to be cremated at death, the society is prepared to accept a donation from him or her of ten guineas, undertaking, in consideration thereof, to perform the cremation without the customary fee, provided all the conditions set forth in the forms issued by the society are complied with." This payment, moreover, constitutes the donor a life-member of the society, and he receives the annual report and all documents, etc., issued to the ordinary annual subscribers.

A considerable number of persons have adopted this course in order to express emphatically their wishes in relation to this matter, and to ensure as far as possible the accomplishment of them. The society undertakes to do their utmost to facilitate the subscriber's object; and probably no better mode of effecting the purpose can be selected than that of placing a written declaration of the testator's wish, together with the society's signed undertaking, in the hands of the friends who are to act as executors. Hence, on the decease of a subscriber, the society undertakes to send, without further charge, an agent when required to the family residence, if within twenty miles of Charing Cross, in order to supply information and make all the necessary arrangements. In this way survivors, who may naturally anticipate considerable difficulty in complying with a request, on the part of the deceased, to be cremated, being often ignorant even of the mode of making an inquiry, may be spared all anxiety as to the manner of carrying his design into execution. Where the distance is greater than twenty miles, all information will be supplied by letter, or an agent sent for a very moderate charge.

It has long been the desire of the council to render the crematory established at Woking as complete as possible. Although they have had reason hitherto to be satisfied with the capability of the apparatus employed, and with the results obtained, recent improvements had been made in furnace-construction, and these have been recently applied there. A full description of the furnace employed follows in its place. But they were especially desirous to provide buildings suitable for the performance of religious service at the crematory when required, besides waiting rooms for the accommodation of friends and other visitors. Before these were erected, a funeral service had in most cases been performed before the arrival of the body at Woking; although in some instances it was held in the grounds of the crematory.

About three years ago the council decided on making a special appeal to the public for funds to carry out this purpose, and a considerable sum was soon provided by subscription. The list was headed by a hundred guineas each from the late Duke of Bedford and the Duke of Westminster, who warmly testified their interest in the project.

When about three-fourths of the required sum had been received, plans were prepared by Mr. E. F. C. Clarke, the architect, and after tenders had been obtained and a contract made, the designs were carried out with much care and in a very substantial manner.

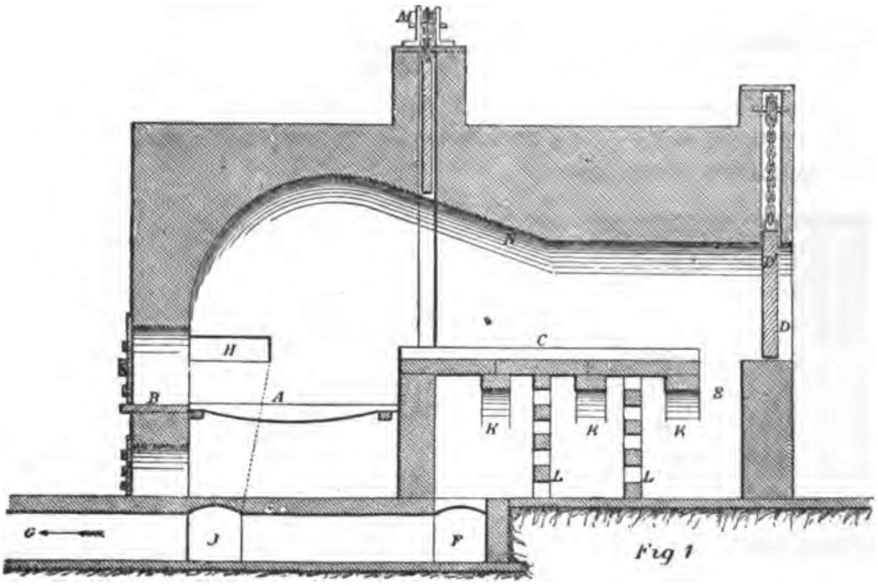
The buildings were constructed in the character of English thirteenth century Gothic, with richly traceried windows, agreeable in appearance, the buildings harmonizing well with the surrounding woods. The body of the structure is in red brick, relieved to a large extent by Bath stone; and when the grass terraces and gardens are completed, the general effect will be extremely good. The central hall, or chapel, is forty-eight feet long by twenty-four feet six inches wide. The vista of the roof, which is twenty-eight feet from the floor to the top of the panelling, is thus left intact. The hall is so arranged that those who attend see and hear nothing of the proceedings in the crematory proper. Its ceiling is richly panelled, and will, as well as the walls, be suitably decorated; the windows are filled with stained glass. A convenient ante-room and porch are arranged in this space by the introduction of richly panelled and moulded screens. Suitable lavatories, etc., are provided.

In connection with these buildings is another, a small but very complete crematory for the exclusive possession of the late Duke of Bedford, which has been built at his expense on the society's land. It was used for the first time after the lamented death of his Grace, for the cremation of his remains, in accordance with express instructions, on January 18, 1891.

A pretty porter's lodge, at the entrance of the well-wooded grounds, forms the dwelling of the attendant and superintendent of the crematory.

The drawing placed as frontispiece to this volume is reproduced from a sketch by the architect, and shows the hall or chapel as the loftiest part of the structure, the next block with the chimney being the chief crematory, beyond which is the private one just referred to. The waiting rooms are on the further side of the chapel.

The furnace employed is too important a part of the appointments at Woking to be left without a full description. The following has been supplied by the well-known firm of Newlands Brothers, Chemical Engineers, London, who designed and superintended its erection for the society, and is taken by permission from the report recently issued for the past year:



LONGITUDINAL VERTICAL SECTION.

Fig. 1. Longitudinal vertical section.

Fig. 2. Plan of the floor of the cremation chamber.

Fig. 3. Cross section through the furnace.

Fig. 4. Ditto through the floor of the cremation chamber.

Fig. 5. Platform in front of the cremation furnace, showing the carrier.

A, Fireplace, with grate bars.

B, Furnace door.

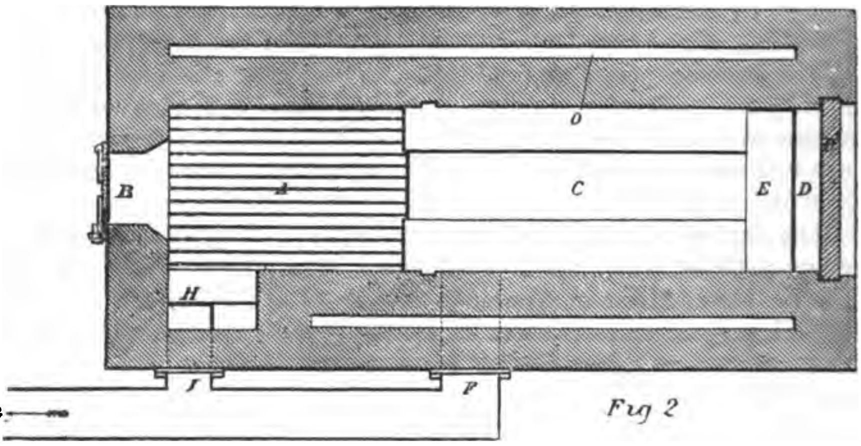
C, Floor of the cremation chamber, the sides of which are four inches higher than the central portion.

D, Doorway for the introduction of the body.

*D*¹, Fireproof door closing the latter.

E, Flue passing over the end of the floor and returning underneath, connecting at *F* with the main flue *G* leading to the chimney.

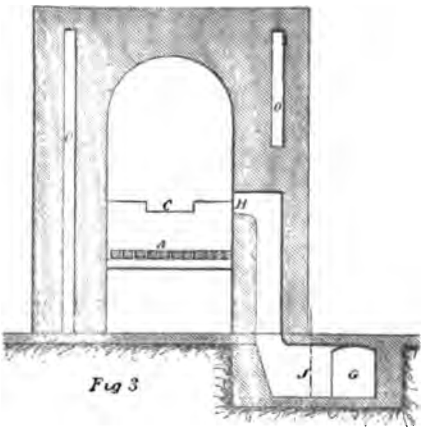
H, By-pass flue connected with the main flue at *J*.



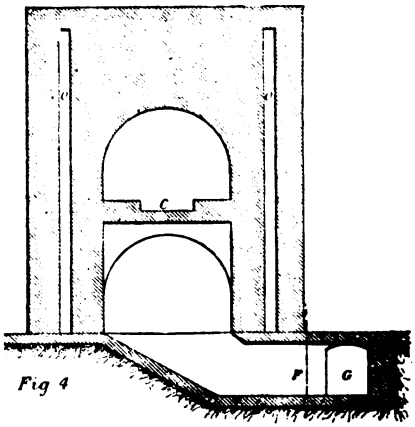
PLAN OF THE FLOOR OF THE CREMATION CHAMBER.

K, Arches supporting the floor of the chamber.

L, Partition walls with pigeon-holes for the purpose of ensuring the complete combustion of the gases.



CROSS SECTION THROUGH THE FIREPLACE.



CROSS SECTION THROUGH THE FLOOR OF THE CREMATION CHAMBER.

M, Damper to be lowered during the introduction of the body, at which time the by-pass flue *H* is used by opening the damper at *J* and closing that at *F*.

N, sloping arch to cause the flame to be deflected sharply downward midway upon the floor of the chamber.

O, Air-space between the furnace and the outer walls.

P, Platform upon which the carrier stands to receive the body.

Q, Wrought iron carrier upon wheels running on rails.

R, Loose bearers laid upon the carrier to support the body or coffin when the carrier is pushed forward into the chamber and slightly lowered; the bearers rest upon the raised sides of the floor and admit of the carrier being withdrawn from beneath them. The link form of these bearers facilitates their withdrawal from the chamber when the cremation is ended.

I am happy to say that the cost of all these buildings, as well as of an additional piece of land lying to the left of the original plot, has been defrayed, that the society's property is a freehold absolutely without incumbrance, and that it is vested in the hands of trustees. The council is largely indebted to the generous aid of the late lamented Duke of Bedford, who took great interest in the progress of the building and in the perfecting of all arrangements connected with the process of cremation. Thanks to the Duke's countenance and support, which he was ever ready to afford me, as president of the society, and which I cannot too gratefully acknowledge, as well as to the personal efforts which the members of a most efficient council made in its behalf, the present satisfactory condition of our enterprise has been attained. But I must be permitted to state that his Grace the Duke of Bedford, besides defraying the cost of the crematory constructed for himself and his family, gave me from time to time, as funds were required to complete our buildings, sums amounting to no less than £2,500, and furthermore purchased for the society half an acre of ground adjacent to our property, which forms a very useful addition. Only a fortnight before his death, he suggested to me that we required an apparatus for warming the chapel, and requested me to get what I thought best, and allow him to have the pleasure of presenting us with it.

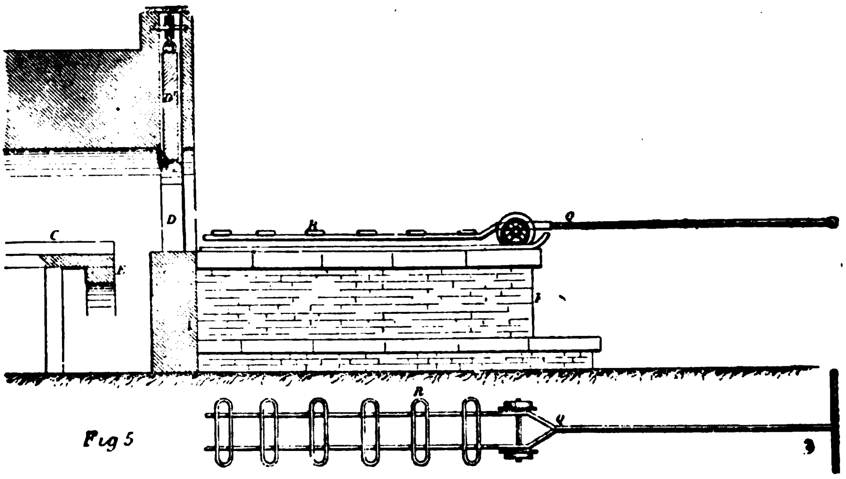


Fig 5

Platform in Front of the Cremation Furnace Showing the Carrier.

Our current annual expenditures are considerable. The wear and tear of the furnace due to the intense heat necessarily employed, rapidly occasions dilapidation requiring repair. This will be met in future by the income derived from cremation fees, as will be the cost of the superintendent's salary and occasional assistance, for gardening, etc. From this source also have to be paid the rent of the London offices, and all service and other charges connected therewith. The small income contributed by annual subscriptions to the society serves to defray the cost of printing, prospectuses, forms, periodical reports, etc.; the whole involving an amount of expenditure requiring all the revenue at present obtained.

In order to complete the establishment at Woking, it is proposed to erect a handsome cloister in a style corresponding with that of the building, constructed with open arches on one side, to be protected by glass from the weather. The estimated cost is £1,500; and the object is to offer secure and appropriate cells for the protection of ashes, giving, so far as this is possible, apermanent interest therein to the family of the deceased if they desire it. These cells will be of various forms and sizes, adapted to receive a cinerary vase or more or less rectangular casket or sarcophagus. A single cell may thus be secured; or any number may be retained as a separate group, to form a family vault if required. Donations are wanted to enable the council to carry out this work.

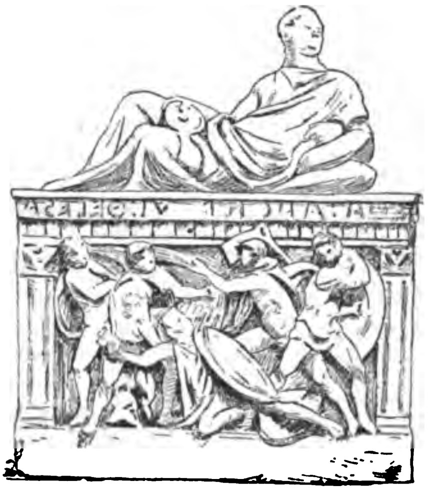
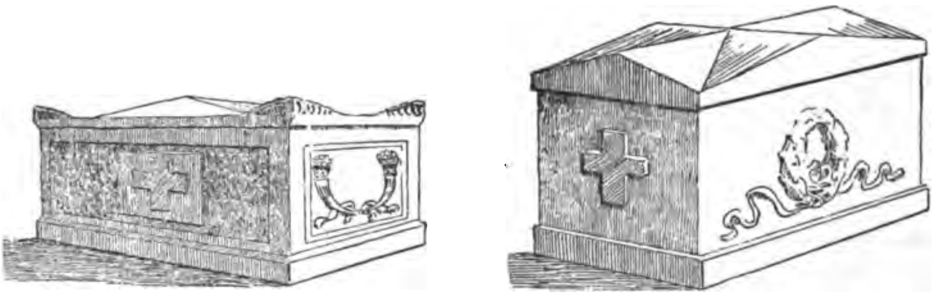


FIG. 6.—AN ETRUSCAN "CISTA" IN THE BRITISH MUSEUM.

Examples of cinerary urns employed in ancient times exist in great abundance, and they vary in character as the customs and rites of the locality differed, and with the historic period at which they were made. Thus "urns" of many kinds, at first rude in workmanship, assumed in time pleasing forms, and were ornamented with simple patterns. Latter still appeared the vase-like urns adopted by the Greeks; but few of these are suitable for general use for the limited areas remaining among the crowded populations of modern time. Although beautiful in form and admirably adapted for artistic ornament, they are liable to be easily damaged, and necessarily occupy considerable space. More safe in regard to durability, and more convenient in relation to deposit of storage, is a receptacle, the form of which is contained within the lines of a parallelogram; while such a vessel offers ample opportunity for artistic treatment. Examples of this kind were employed by the Greeks, under the name of *Kiste* (in Latin, *cista*),[1] and by the Etruscans; although the term "urna" originally denoted vessels of this form as well as those allied to that of the vase. The materials employed for their construction were various, such as terra-cotta, often travertine, sometimes marble, alabaster, and even glass, at that time more costly than any. The well-known "sarcophagus," oblong in form, and large enough to contain the entire unburned body, often much larger, was elaborately ornamented. Sculptures in high and low relief adorned their sides, and statuesque recumbent groups often occupied the lid, the subjects having some relation to the deeds, tastes, or occupations of the departed. The smaller *cistæ* above referred to resembled the preceding, but were comparatively small, being designed to hold the ashes only after cremation. One of these is represented by Fig. 6. It is interesting to remark that the word *Sarkophagos*, derived from two Greek words denoting the eating or consuming of the body, was originally employed to denote vessels made of a limestone found in Assos, in Troas, which possessed some of the chemical power of quicklime. After being deposited therein, it rapidly decomposed the dead body, destroying the tissues (Pliny said, "in forty days"!), leaving only the skeleton; and this process formed an excellent, because sanitary, mode of burial.



FIGS. 7 AND 8.—SIMPLE FORMS ON CINERARY URNS, DESIGNED BY THE AUTHOR.

Numerous examples of sarcophagi and cinerary urns are preserved in the Gregorian Museum at the Vatican, at the Kircherian Museum, and at that of St. John Lateran, Rome; there are many others also at the Campo Santo Pisa, at Florence, Bologna and Perugia. I have recently endeavored to utilize some of the best types among these, and to produce some simple forms generally modified from more ornate designs, and to present them not only on purely classical lines but with the Christian emblem of the cross. The panel thus occupied may be used for the name of the deceased, or for any inscription desired. Having submitted two or three to Messrs. Doulton & Sons, these gentlemen kindly entered at once on the work, and have produced them on reasonable terms in terra cotta. Two are given here (Figs. 7, 8). They measure at most sixteen inches in length by eight inches in height and eight inches in width, and afford ample space for the ashes of the largest body. Such receptacles are well adapted to occupy cells or niches of appropriate size, side by side, in the walls of a cloister, each cell closed, say, by a small marble slab bearing the name of the deceased.

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[1] There is a collection of these small forms on the first floor, beyond the Greek vases, in the British Museum.

Of course where it is desired to construct some monumental shrine by itself, the vase-like urn may find an appropriate place. Many examples of this kind are to be found in the great cemetery at Milan, associated with the crematorium there. The Messrs. Doulton have executed some good examples of this kind also, which may be seen at their establishment at Lambeth. They have been good enough to furnish us with drawings which are reproduced above.

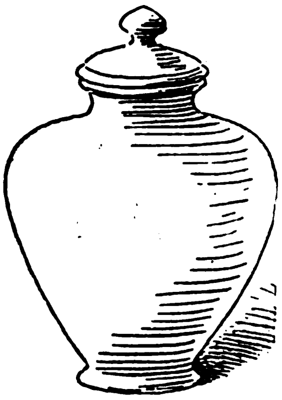

FIG. 9.

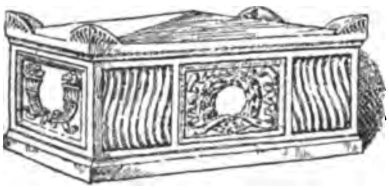

FIG. 10.

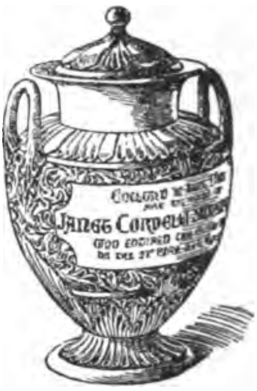

FIG. 11.

Fig. 9 represents the simple antique vase in pottery, of which so many have been found by excavation; it is one of these which is given in each case at Woking, to contain and preserve the ashes when removed or buried.

Fig. 10 is a more ornate reproduction of a Roman sarcophagus at the Campo Santo, Pisa, which suggested the modification forming the cinerary urn represented at Fig. 7.

Fig. 11 is a handsome vase, in well-chosen colors, made by the Messrs. Doulton expressly for cinerary purposes; and of this they have several modifications in form, color and decorative design.

DR. HAMMOND has collected records of seventy cases of men dying suddenly in running to catch the cars at Washington, D. C.

AN outbreak of typhoid fever recently occurred in England, which could only be traced to an antecedent case of twelve months previous.

THE foot-ball casualties in England during the season 1891–92 amounted to eleven deaths and seventy injuries; worse than the prize ring, says the *Lancet*.

Is "Chemistry Incompetent to Determine the Hygienic Purity of Water?"

BY CHARLES PLATT, A.C.,
The Vandenbergh Laboratory, Buffalo, N. Y.

AN odd question is this in the close of the Nineteenth Century, but as Dr. George T. Maxwell, in the October issue of the ANNALS OF HYGIENE, has publicly asserted the affirmative, it is becoming that some one should take up the cudgels and answer the above in chemistry's defense.

Dr. Maxwell, it seems, while stating that the "proportions of the organic and inorganic elements in water used for drink, running up to millionths per cent. in 100,000 parts" (whatever that may mean), may be detected by chemical reagents, confidently asserts that no chemical analysis can prove the presence of typhoid germs, cholera germs, etc. "The theory that such 'impurities' as are found in the tables of 'standard authorities' can cause zymotic diseases, is out of date." "The chemist as a factor in the determination of the question of the hygienic purity of water is, in slang phrase, a 'back number.'"

The gentleman evidently has never given the study of water analysis very profound thought and probably may be excused on this account, but in a public statement it is sometimes advantageous to be more or less familiar with one's subject. But let us proceed slowly, let us first ask, does chemistry —did any chemist, ever claim to be able to assert as a result of analysis that this water will cause typhoid, that that one will bring on an outbreak of cholera, or that this other one will produce chicken-pox or measles? We think not. A water supply is in question, it may be a well, it may be a stream or a lake; the water is given over for analysis to determine its hygienic value and it is reported upon as pure, as fairly good, as suspicious or as dangerous as the case may be. So far the chemist can go, and in so doing he has fulfilled his charge and has answered the question of safety to the public health in its broadest sense. He is called in as a judge and gives his decision not by analysis alone but by analysis together with a full understanding of existing local conditions. His decision is not made may be at his laboratory desk, but after a careful study of the water in all its relations. He will also probably have made a microscopical examination which will be included in his report. Not from any one of these data will he give his opinion, but from a comprehensive study of them all—this comprehensive study is necessary, and it is from the chemist best of all that it can be obtained.

But our friend the doctor makes a concession. He does not contend "that those so-called impurities are desirable or necessarily innoxious." Evidently then chemistry is not altogether useless, "a back number," and "out of date," to use the gentleman's phraseology. Is it not of some importance to a city or to an individual, contemplating a possible water supply to know that the water contains such impurity as "may depress vitality and lessen the power of resistance to the cause of disease?" A certain eminent chemist of the old world has experimented upon himself by drinking of diluted sewage for a period of days and without the production of typhoid or other zymotic disease. Would the Doctor urge from this that sewage drinking is beneficial or desirable, and that chemical analysis pointing to the presence of sewage in a water is without its value to the public health?

Our learned friend can see no distinction in organic matter of different forms. He asks why should the presence of organic matter condemn a water, "does not every individual of the animal kingdom feed, thrive and depend for life upon organic matter? There is more organic matter in a plate of 'boarding house soup,' than in any well or spring in Florida; and there is more organic matter in a substantial dinner than in all the wells in the state!" All this is foreign to the question at issue and requires no remark. But read further, "Is it proven that even putrescent organic matter is wholesome? Many of the lower animals feed exclusively on carrion." Our friend surely would not accuse the human race of being capable, with the blue-bottle and the condor, of enjoying a dish of decayed flesh. Is it not rather more than "simply a question of taste?" It is a pity that such an enormous source of food should go to waste each day.

With more truth the Doctor speaks with charming sarcasm of the "tables of 'standard authorities.'" No standards are reliable in water analysis, it is well nigh impossible to place as limits of purity certain figures, no matter how widely the extremes may be chosen. That amount of impurity which would condemn a water from one source would be quite admissible in water from another. In consequence of this fact it is never advisable, nor is it fair to the future consumer of the water to give an opinion as to the purity or impurity of a certain supply from the results of analysis alone. In cases of this kind when the chemist receives a sample of water for analysis, regarding the source, or local conditions, of which he knows nothing, it is the general practice to report merely the results of the analysis and nothing more. Nor is heresay evidence sufficient for an intelligent report, the chemist himself should in all cases take his own samples for analysis and give the locality from which they are obtained a careful examination. Then assisted by this information his analysis becomes of great value and he need not hesitate to make his report in most unconditional terms; furthermore, the report should be accepted as unconditionally as given. Unfortunately this is not always the case, expense is a large factor in the final decision upon a water supply and the false economy exhibited by many intelligent people in this regard is deplorable. Even after the decision between two possible supplies is given the more distant being, may be, the more desirable how often in the end is the nearer, more dangerous, and *cheaper*, supply the one finally chosen.

Dr. Maxwell, in union with many others, draws too sharply the line between the chemist and the microscopist, and herein falls into error, for while the professional microscopist is not frequently a chemist, pursuing his studies rather in organic molecular groups than in the individual atomic relation, the chemist on the other hand has in his perfectly equipped laboratory a microscope along with his test tubes and retorts, and from the reactions of the liquid tests turns naturally to the confirmative examination under the glass. The two going hand in hand to the final result. In a water examination is this particularly true, carefully prepared drawings of the life revealed by the microscope always accompanying the report of analysis. Valuable, however, as this microscopic examination is in assisting to the final decision *it is not* sufficient in itself and I would far rather render my report with the results of analysis alone upon which to found my opinion, than to rely in like manner upon the most careful and conscientious study of the water with the aid of a microscope.

Zymotic disease is infrequently present as such in water for any considerable length of time; it is derived from abnormal conditions which in course of time again disappear. Thus the presence of these definite germs of disease will not ordinarily be remarkable. The excreta of a healthy person will not contain them,—is then excreta a desirable component of our drinking water?

We would differ, then, in all friendliness, from the Doctor in his very first principle; an ordinary hygienic examination of water is not a search for typhoid germs, nor indeed for any other of like specific nature, it is to decide whether such water is safe as regards the public health, whether it is liable to become contaminated from any source, whether, by analysis, such contamination is now present, and finally by microscopic evidence to determine the organic form of such matters as are in suspension.

Physical Culture.

BY JOSEPH F. EDWARDS, M.D.

(Concluded from page 515.)

I HAVE an idea (which I am willing to admit may be incorrect, though I do not think that it is, for general physiological laws would give color thereto), I have an idea, I say, that whenever any one part of the body is developed to excess, such development entails a lessened vitality of other parts. If, for instance, the vital energies, so to speak, of an individual are concentrated upon the development of his muscular system, then would I fear that the lungs, the heart, the liver, the stomach, the brain and so on would be thereby robbed of that which they require; the vital current, or at least more than a due portion thereof, would be diverted from the vital organs toward the muscular system.

There can be no question that a "happy medium" in everything is the condition most conducive to health and longevity. It is very generally recognized and admitted that alcoholic excess is inimical to health; but it is not so universally known that an excessive consumption of good beef will be also conducive to disease, and in like manner will excessive physical culture have a tendency, ultimately, to invalidate the person so indulging. To go back, for a moment, to the condition of the heart that we were discussing last month, the question will be naturally asked whether by a gradual process of accustoming the heart to strain, the danger that has been depicted will not be rendered impossible. To this question I answer no; the danger will be lessened of course, but it will not be nullified, and it will be impossible for any one who subjects his heart to strain to say just at what moment this strain may become too great for these delicate cords to withstand.

James J. Corbett.

Clearly understand me, I am an ardent admirer and advocate of "physical culture;" no one more firmly believes that muscular development is an essential of good health, but I, equally, firmly believe in the wisdom of "exercising for health" rather than of "exercising for strength."

I would not hold up professional, or even amateur athletes as models; I would not countenance contests of strength and endurance, however interesting and attractive they may be; I would not recommend walking matches, and I would condemn with all the fiery vehemence of my nature running matches (horses were made to run and men to walk); I would unhesitatingly and unqualifiedly say that any form of physical culture that looks toward the accomplishment ot any definite result, be the means and consequences what they may, should be condemned. To make my meaning clearer, I would say that a boat race, wherein each man of the crew is striving to make the boat go as fast as possible, and where each must do his utmost to the end, regardless of how he may feel or what may be the consequences, that such a race, while it may increase the muscular, will surely deteriorate the vital strength. What is true of boat racing is equally true of all contests wherein as much is expected of the weakest as of the strongest, and wherein ambition and false pride will carry a man to the danger point. Motion, as I have said, means exercise, and every time any muscle of the body is moved it is being exercised. As I write my fingers are being exercised just as surely as they would be in a gymnasium; but if I carry this writing to an excess I am very likely to have "scriveners palsy;" I have carried the exercise of my fingers beyond the point of health and disease is the result.

As with the fingers, so with the muscles of the whole body; exercise is essential to health, but excessive exercise is provocative of disease. Certainly, I think I have now made my idea clear. I am not preaching, I am only stating facts; if you want to possess great muscular strength, *for a time*, so that your friends will look upon you with awe and the fair sex will admire your powerful proportions, go ahead and develop your muscular system by all the possible means of violent exercise within reach; this is a free country; we can all do pretty much as we please, and if you desire present muscular strength at the cost of future vital weakness, you are at perfect liberty to acquire it.

But, if you desire that measure of physical culture that is conducive to health and longevity, you will ever remember that *motion* not *strain* constitutes healthy exercise, and you will never forget to heed the cautionary signal that I have already told you is to be found in the evident beating of the heart.

I have so often made the statement, that I almost hesitate to again say that there is no form of exercise that anywhere approaches "walking" as a means of physical culture conducive to health. If one will walk five miles daily and will supplement this daily walk by indulging morning and evening in the following simple exercises, recommended by Mr. C. P. Lenhart, the physical instructor of the Manhattan (N. Y.) Athletic Club, he will, therefrom, receive all the physical culture that is essential to health. The only apparatus requisite is a cane:

> For the upper part of the arms: Grasp the cane firmly at both ends with the hands and hold it across the chest, letting the middle of the cane rest on the breast, just under the chin. Drop the hands forward and down to the full length of the arms rapidly and return to position on the chest, accenting the upward movements. Continue this for thirty seconds. Holding the cane as before, push the arms straight above the head full length, taking long, full breaths. Continue this for thirty seconds more.
>
> If the arms are poorly developed, this may be repeated after the other exercises are completed. When the arm is doubled up so that the fist is near the shoulder, the biceps ought to measure about two inches more in circumference than the forearm.
>
> For the muscles of the sides: With the arms at full length above the head and the hands grasping the cane as in the end of the last exercise, swing from side to side as far as possible; time, thirty seconds.
>
> Here pause and take two long, deep breaths of five seconds each.
>
> To strengthen the muscles of the back and rid the abdominal muscles of fat: Holding the cane as in the last position at arm's length above the head, bend forward and bring the cane as near the floor as possible without bending the knees or elbows, then swing as far back as possible without losing your balance. Do this briskly for thirty seconds.
>
> This will make a large waist smaller if persisted in. It is good for lumbago also, and will help those who bend over a desk all day.
>
> To strengthen the forearm: Grasp the cane in the middle with one hand and extend it at arm's length on a level with the shoulder. Then twist the cane back and forth, like the spokes of a wheel, for twenty seconds.

Or you may resort to such movements as we depicted in our issue for February last; in fact you may exercise for health by making any muscular movements that suggest themselves to you. But, whatever you may do, never forget what I have said about the cautionary signals of the heart. There are some questions in hygiene that are open to honest dispute, while there are others that are as fixed, immutable and certain as the rising and the setting of the sun, and this heart question belongs in this category.

I might write on indefinitely, but I could say no more than I have done. To recapitulate and formulate, I would remind you that motion means exercise, and that exercise when combined with right methods of life, means physical culture. Violent exercise means muscular strength; gentle exercise means vital strength; and the moment, when exercising, that you are conscious of the beating of your heart, you have reached the limit of safety, and if the exercise be continued it will be at the peril of your health.

Remember and act upon this precept and you will gradually increase your measure of healthy strength, so to speak; heed it not, and you will, inevitably, sooner or later, regret your foolishness.

The Electric Light and Its Effects Upon the Eyes.[1]

BY GUSTAVUS HARTRIDGE, F.R.C.S.,
Surgeon to the Royal Westminster Ophthalmic Hospital, Etc.

ELECTRIC light consists of two chief forms at the present time—the arc light, which is chiefly employed for outdoor illumination, for large stations, workshops, etc.; and the incandescent electric light employed for indoor illumination, railway carriages and shops. The arc light is produced by passing an electric current between two carbon points which are separated by a slight interval, the most intense light being produced when only a short space intervenes between the two points; particles of carbon at a white heat pass over from the positive to the negative terminal, a concavity being produced in the carbon connected with the positive pole, while a deposit takes place on the carbon point to which the negative pole is attached. This passage of particles of carbon at a white heat from one pole to the other adds no doubt considerably to the illumination produced. The light is of a bluish, dazzling brilliancy, which renders it unsuitable for illuminating purposes except when placed at a considerable distance from the eyes; even then the eyes should not be expcsed to its direct influence. Another great disadvantage of the arc light is that it is apt to be intermittent and unsteady.

The incandescent electric light is obtained by passing the electric current through a non-conducting medium *in vacuo*. At first a platinum wire was used, but this has given way almost entirely to a carbon filament made from cocoanut fiber. When electricity is passed through this non-conducting material the friction produced is sufficient to raise the filament itself to a white heat. If this takes place in a vacuum no combustion of the carbon occurs. The light thus produced is very suitable for general illuminating purposes; it is much less intense and brilliant than the arc, is of a less blue color, and is fairly steady.

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[1] From the *Monthly Sanitary Record*.

In the present state of our knowledge it may be assumed that good and sufficient sunlight is the illumination best suited to our eyes; sunlight must therefore form our standard by which artificial forms of illumination may be compared; the nearer the artificial light approaches in its characters to those of sunlight, the better.

A comparison of the constituents of some of the different forms of light shows the following proportions:

	Red.	Green.	Blue.	Violet.
Sunlight........	1.4	1.6	0.5	0.1
Electric Light...	2.0	1.0	0.8	1.0
Paraffin.........	3.0	0.06	0.2	0.1
Gas.............	4.0	0.04	0.2	0.1

It will thus be seen that the electric light contains a smaller number of those rays which belong to the red end of the solar spectrum, and in this respect most nearly resembles sunlight; next to the electric light comes paraffin, and last of all gas. It has been proved that the rays which belong to the red end of the spectrum, that is, those of the greatest wave length, are those which are most liable to irritate the retina. In this respect, therefore, electric illumination stands out as superior to its opponents.

The electric light gives off but little heat and no products of combustion, while paraffin occupies an intermediate position between electric light and gas. To many eyes the heat generated by an artificial illuminator is very irritating, quite independent of the composition of the light; the products of combustion also vitiate the atmosphere, and in this way add another source of irritation, as well as tending to produce a feeling of lassitude and fatigue. Thus we get with the electric light that desideratum—the maximum of illumination, with the minimum of heat, and no products of combustion. It may at once be admitted that many eyes suffer discomfort when used for a length of time under the influence of any artificial light; this is most liable to occur when the eyes have been used for near work throughout the day; the accommodation having been in constant use, the ciliary muscles, or the nerve centres innervating them, become fatigued; this liability to discomfort will be increased if ametropia is present, even in those cases where the error of refraction is so slight as to have escaped detection; this ametropia not only increases the work of the ciliary muscle, but deranges the associated action of the two linked functions, accommodation and convergence, which under these conditions have to be used in unequal degrees.

Again, a person of robust health may, even under unfavorable circumstances, have no discomfort so long as he remain in excellent health; but let him get debilitated from any cause, then discomfort may arise, and, once it has appeared, may continue, even when the individual has regained his full health; here the use of any artificial light may start the discomfort.

To sum up then I would say, that the arc light is unsuitable for indoor illumination because of its intense brilliancy, on account of its unsteadiness, and because it contains a large proportion of violet and ultra-violet rays, which though probably absorbed by the media of the eye before reaching the retina, cause a certain amount of fatigue. When used for outdoor illumination the lights should be placed high, so that they may be a long way from the eyes, and should then be inclosed in ground glass. Looking directly at the unprotected arc light for any length of time is dangerous to the eyes.

The incandescent electric light may be used with advantage for indoor illumination, since its composition compares well with sunlight; while containing but few rays belonging to the red end of the spectrum, it has fewer violet and ultra-violet rays than the arc light; it is very steady, and can be turned off and on with ease in different parts of the room, according as the light may be required. The chief difficulty at present is in placing the lights in the best positions with regard to the requirements of the room; it is obvious that lights, placed so as to give a general illumination would not be the best that could be devised for any near and special work—reading, writing, etc. Further experience is required with regard to placing the lights in the most advantageous positions; sometimes the illumination required is general, while at other times the light may be confined to one part of the room, the remainder being in comparative darkness; but in all cases the lights should be shaded, either by having the glasses containing the light cut or ground, or by covering them with some thin material, as silk or muslin of a light color, the object always being to shade the lights with as little loss of illuminating power as possible; the present tendency to have decorated ceilings diminishes the amount of light and diffuses it unequally. Many eyes are liable to fatigue when used by any artificial light for a long time together, but I have known many cases where highly myopic eyes, and eyes affected with choroiditis or other diseases, have derived great benefit by the substitution of the electric light for gas.

Thus the incandescent electric light possesses advantages which no other illuminator can claim, and must be considered, when carefully shaded and judiciously placed, as the best and most satisfactory form of artificial illumination.

Gymnastics in Schools.[1]

BY DR. F. H. WHITTIER,
Of Bowdoin College, Maine.

MAINE is a good State, it is often said, to rear men and women in, and I think the State has well earned that reputation. What do you suppose is the reason that a State like Maine, situated at the extreme northeastern portion of the United States, sparsely populated, containing altogether about one one-hundredth of the population of this country, should have so many men of whom America is proud? Why should it have such a great influence upon the politics of this country, besides furnishing governors, congressmen, judges and college presidents to her sister States. I cannot help thinking but what a great many of our Maine men and women owe their success in life to the robust strength and sound constitutions developed by the exercise afforded by their country lives among the hills of Maine. Dr. Webster has emphased the connection between a sound mind and a sound body, and it is not necessary for me to pursue the subject further. The history of individuals shows this connection, and the history of nations shows the same thing. Take, for example, ancient Greece, the first country to make physical exercise a part of the education of youth. As long as those exercises were popular, as long as they were kept up, Greece steadily rose in intellectual and political power and influence; but as soon as the people became rich and luxurious, and allowed those exercises to decline, then intellectual progress stopped and their political power began to wane. A few centuries later Rome had the same experience. Coming down to modern times, about fifty years or more ago, Germany introduced a complete system of physical education into the public schools, and into her army, and you all know the great advance that Germany has made of late years, both in the matter of political influence and intellectual growth. The Germans themselves ascribe a great share of this advance to the influence of their system of physical education. Perhaps the greatest miracle of modern times is how a country like England, in area hardly twice the size of the State of Maine, should exercise a greater influence in the world than any other country. It would be interesting to consider how far this influence is due to the pluck, energy and strength developed by that system of games and out of door sports for which England is noted. To those who believe, as we do, in the connection between a sound mind and a sound body, it is not cheerful to think that the boys and girls of Maine are of less vigorous physique than were their grandfathers and grandmothers fifty years ago. If you doubt that this is so, you have only to talk with the oldest inhabitant and you will be assured that there were giants in those days, and that the boys and girls now are not at all physically what they were then. Take the one thing of placing a bar or string the height of the head when erect, and then by taking a run, jumping over it. I doubt if there is a man in Maine that can do that athletic feat to-day, and yet I never talked with the oldest inhabitant but who had done that thing himself, or who had an uncle who could do it. Take a feat of lifting a barrel of whiskey by the chimes and drinking out of the bunghole. Where is the man to-day that can carry off a barrel of whiskey in that way, or in any other.

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[1] From *The Sanitary Inspector.*

But I feel sure that Maine children now are weaker than they used to be; and I think it is due largely to two causes. First, the health of Maine people is fast changing. We are changing from an agricultural and lumbering country to a manufacturing country. Farming and lumbering, and other laborious occupations, are becoming unpopular. We are changing from handworkers to brainworkers. If this age of steam and electricity keeps on, the time is coming when a man's life-work will involve no severer physical exercise than pressing an electric button or dropping a nickle in the slot.

Another reason for the increased weakness of our children is in the faulty methods used by parents in bringing children up. I am inclined to think they are bringing up their children too much in the same way they rear house plants. It is not well for children to be kept under a glass case, nor is it well for children to be dressed so nicely that they cannot play in the dirt. The Grecian mother wanted her son to return with his shield, or upon it. The New England mother, while she may be anxious that her boy should learn to swim, is unwilling that he should go near the water.

The situation of our girls is worse than that of the boys. At the age when Harriet Beecher Stowe and Annie Louise Cary and Lillian Norton were tramping through the woods and fields, chasing butterflies or picking blueberries, the girls of to-day are playing with dolls or poring over the books and developing spinal curvature at the piano.

I am convinced that our Maine children are in arrears in the matter of physical development; that children of a given age are not as well developed as children of that age should be. During the past few years I have been in a position to note the development of boys as they come to college—boys between the ages of sixteen and nineteen—and I am convinced that these boys are not as well developed as they would be if they had had a fair amount of exercise. My experience has been that such boys, during the first five months of their college course in the gymnasium, increase their strength on an average between thirty and fifty per cent.; and I am not so conceited, I have not such faith in my mode of training, as to think that I could get any such results if their physical training before they came to college had not been neglected.

For the last few years I have been experimenting with gymnastics in the public schools of Brunswick. The results there have been most gratifying. I have been able to give but little time to the work, but I think Professor Robinson will bear me out in the statement that what little work has been done has exerted a marked change over the personal appearance of these boys and girls. This is not the place, nor have I the time to discuss the methods to be used in physical education. There are three systems in vogue in this country: the Sargent system devised by Dr. Sargent, himself a native of Maine; and the two methods imported from Europe—the German method and the Swedish method. All these methods are good in their way. The Sargent method is no doubt the best for colleges, and it has been introduced into most of the colleges in this country. It is too expensive and takes too much time and money to be placed at once in the public schools. The German and Swedish methods afford a system of class work which can be applied to the uses of public schools with very little expense. I think the method of the future will be a wise combination of what is best in the German and Swedish systems, with some of the leading principals of the Sargent system. The Sargent system, as you probably all know, involves a careful examination of the student, and prescription of such exercise as will tend to remedy his physical defects.

The State Board of Health of the State of Maine has done much to advance the cause of physical education in this State, and I hope it will still continue to take an interest in it.

It seems strange that our Maine teachers are so far behind hand in the work. In Massachusetts, Connecticut, New York, Pennsylvania and through the West, gymnastics are being rapidly introduced into the public schools. I suppose there are twice as many children taking regular exercise in the public schools this year as there were last, and twice as many exercised last year as the year before. It has spread like wildfire everywhere, and I hope you will all exert your influence to see that the State of Maine shall be true to her State motto in this respect.

Queer Burial Customs.[1]

JUST at present when the Mourning and Burial Reform Association is trying, in a measure at least, to reduce the cost of funerals among the people, it may be of interest to know something of the different mourning and burial customs which have been and are now in vogue. Death, however unpleasant to contemplate, is inevitable to all, and the necessity of disposing of dead bodies in various countries has given rise to a variety of customs, each as different from the other as are the various peoples of the earth themselves. A funeral in every country and among all people, however high or low their grade of civilization might be, always has been and is more or less of a religious observance, not always of a mournful character, but in some cases furnishes an opportunity for feasting and general enjoyment to all concerned, with perhaps the exception of the immediate relatives of the deceased, while in other instances a funeral is the occasion of the deepest mourning and sorrow, says a writer in the Jersey City *Standard*.

The ancient Egyptians celebrated a funeral by feasting and drinking while the work of embalming—which took seventy days—was going on; but throughout all they remembered that no one is exempt from death, and to remind them of the fact a skeleton was placed in the banqueting hall, where it remained during the feast. Sacrifices were offered to the gods and the flesh used for food among the priests and guests. In the case of a great lord or a rich person a costly monument was erected, but the poorer classes were laid in the ground sometimes with no embalming, and at times even without a coffin. The Hindoos burned their dead and sometimes sacrificed human beings at the funeral of any personage of note. The suttee, or widow, burning, among great personages was a very repulsive feature of the ceremony. The ceremonies were conducted amid feasting, singing by dervishes and dancing by girls. Sometimes the mourners lashed themselves with knotted cords and sticks until they fell exhausted from loss of blood.

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[1] From *Progression*.

There are in Africa almost as many burial customs as there are tribes of negroes, each tribe having its own peculiar ideas and manners. The majority of tribes, however, bury the dead and destroy all property belonging to the deceased. If it be a chief of high rank, the more barbarous tribes kill numbers of slaves to serve him in the next world and bury his favorite wife alive in the same grave with her deceased lord. The natives of Peru place their dead in a sitting posture with the head between the knees and the arms crossed on the breast. Ropes of bark were tightly wound around the body, which was then wrapped into cloth and again bound until it resembled a mass of cordage rather than anything else. Bodies thus preserved, and from which the air is entirely excluded, are constantly being found among the ruins of the old cities devastated by the Spaniards. The ancient Mexicans observed much the same method, adding to it the sacrifice of hundreds of human beings, in many cases the victims freely giving their consent to die, believing that by this means they the more surely reached the abode of their gods and enjoyed everlasting peace.

Among our own Indians the burial customs differ somewhat, but all believe in a Great Spirit, and in the main they are alike. The Indians of the eastern part of the country, east of the Mississippi, buried their dead, in almost all cases, in a sitting posture, wrapped in a blanket. With the dead warrior were buried his arms, ammunition and food for his journey to the happy hunting grounds, and over his grave his favorite war horse was slaughtered and sometimes his dog, in order that he might enter the land of the Great Spirit in a manner becoming a chief of renown and good repute.

The Indians of the West erect high scaffolds, on which they place their dead in order that they may be out of the reach of wild animals. The dead brave's arms, cooking utensils and blanket are placed with him to use in the next world. The Hebrew manner of conducting a funeral is very plain and simple. The body is wrapped in a shroud and placed in a plain pine coffin, with a lighted candle at its head. The candle is allowed to burn itself out and symbolizes the dedication of the soul of the dead to the Creator who gave it. A simple ceremony is held at the grave by the rabbi, and it is a very rare occurrence for any portion of the service over the dead to take place under a roof. The typical German funeral is rather an elaborate affair, especially if the deceased happens to belong to any singing society. The ceremony itself is solemn enough, and much like an American funeral, but the coffin or casket is always an elaborate one and there is always a profusion of flowers. When the body is taken out of the house members of the singing society to which the deceased belonged assemble around the casket and sing a number of songs more or less appropriate to the occasion—sometimes more but often less. At the conclusion of the services it is usually the custom for the bereaved members of the society to adjourn to the lodge room, where all sorrow is drowned in beer and all grief becomes a thing of the past. A most curious sight to Americans is a Chinese funeral, which is much the same when held here as when the Chinaman is at home in the Flowery kingdom. It makes all the difference in the world whether the dead Chinaman is a member of the order of Free Masons or not, and whether or not he is rich. If he is a Mason his funeral is the occasion of a great spread and display in Chinatown. A brass band is hired to play in front of the dead man's residence and also accompanies the body to the grave. It would seem that noise and not the appropriateness of the tune, is the object in view, for the friends of the dead man are perfectly satisfied, no matter whether the tune be some German waltz or the "Boulanger March." On the way to the grave a prominent Chinaman sits on the hearse and scatters pieces of colored paper along the route, the object of this being to occupy the attention of the evil spirits, which are supposed to follow the departed Chinaman until the grave closes over him. In the coffin with the body is placed a pack of Chinese playing cards in order that the spirit of the dead man may have an opportunity of making a little change during his long and dark journey. At the grave food is placed around his coffin, but after the ceremony is concluded this is taken to the lodge rooms, and the friends eat for themselves and the dead also. No Chinaman is ever buried in this country whose body is not some time, usually after the lapse of two or three years, taken up and carried home to China by his friends. This is a sacred custom among all Chinese, and the body of a Chinaman who has been dead three or four years is no uncommon freight on the steamers plying between San Francisco and China.

About Milk-Teeth.[1]

BY DR. ROBERT L. DICKINSON.

SYMMETRY of feature and sweetness of expression in the lower half of the face; if you appreciate one great beauty in the laugh and the speech of a child, and are hurt to see stumps and gaps in the small mouth; if you have any care on the score of pronunciation; if you are assured that tartar often causes retraction of the gums and loosening of the teeth; if you have ever seen abscess followed by scars on the face, or roots projecting through the gum; if indigestion and its far-reaching effects on growth and strength seem undesirable to you—and, finally, if you wish small dentist's bills for regulating and filling the second set:

Then you will follow these directions—which are essential in every detail:

(1) In the early months (about fifth to twelfth) clean twice daily with soft rag and lime-water.

(2) Later (about twelfth month) brush with small soft brush after each feeding.

(3) Later (about fourth year) teach child to use quill-pick after each meal, and then to brush carefully the most hidden crevices with lime-water, or use waxed silk instead of the tooth-pick.

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[1] Part of a paper in the *Brooklyn Med. Jour.*

(4) Polish off all stains with soft pine stick and tooth-powder.

(5) Take the child to your dentist every three months, beginning at the second year, and have cavities searched for and filled. By having cavities filled early the child suffers none during operation.

Every tooth after the twentieth tooth belongs to the permanent set. These are all in position by the third year. The first permanent teeth are back of these, appearing usually between five and six.

Establish habits early and firmly and the child will keep them.

Forbid rich candy, fresh or rich cake and pastry and hot bread.

Let the child strengthen its teeth on sufficient crusts and on meat not too tender.

What to do for Toothache.

(1) Rinse the mouth and the cavity thoroughly with warm water in which is dissolved all the baking soda it will carry; failing,

(2) Dry the cavity gently with surgical cotton (absorbent) made into a swab on the end of a knitting-needle or crochet-needle, and

(3) Drop one drop of creosote or pure carbolic acid on a bit of absorbent-cotton and pack it gently into the cavity.

(4) A small capsicum plaster (¼ inch square) bought at the drug-store may be placed on the gum. If the tooth is sore to bite on, No. 4 is best.

(5) Take the child to the dentist to find out what should be done to the teeth.

Keeping the Plumbing Sweet.[1]

BY MARIA PARLOA.

GREAT care of plumbing of the house is an important duty, yet, provided there be nothing wrong about the plumbing at the start, and the supply of water be constant and generous, this duty will not be found a hard one. The housekeeper should impress upon the younger members of her family the importance of thoroughly flushing the closets. She should at least once a day personally see to it that there is sufficient flushing. The best time for this is after the morning work is done.

The laundry tubs should be thoroughly rinsed after washing, being generous with the water, that no trace of suds be left in the pipe.

After the midday work is done, and again at night, the pipe in the kitchen sink should be thoroughly flushed with hot water, if possible. In case there be no hot water, be generous with the cold. Once a week put half a pint of washing soda in an old sauce pan and add six quarts of hot water. Place on the fire until the soda is all dissolved; then pour the water into the pipes, reserving two quarts of it for the kitchen sink.

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[1] From *The Ladies' Home Journal.*

Have an old funnel to use in the bath tub and basins, that the hot soda may not touch any of the metal save that in the pipes.

Particles of grease sometimes lodge in the sink pipe and cause an unpleasant odor. The hot soda dissolves this grease and carries it away.

Copperas will remove odors from drain pipes. Put one pound of the crystals in a quart bottle and fill up with cold water. Cork tightly and label. Write "Poison" on the label. Pour a little of this into the pipes whenever there is any odor.

I will say right here that if thorough flushing and an occasional use of the hot soda will not keep the pipes sweet there is something wrong with the plumbing, and it should be attended to at once.

It seems as if one need not caution people in regard to throwing into closet or basin any substance that might clog the pipes, but it is because of ignorance or carelessness on the part of the people who use these conveniences that much of the trouble with the pipes arises. Here are some of the things that should never have a chance to get into the pipes: Hair, lint, pieces of rags, no matter how small; matches, fruit peelings, etc.

There may be a reduction of repair bills implied in these simple rules, but every plumber who does good work hates to see it abused, and is the better pleased the better it works. The above directions are calculated to insure the best possible operation of plumbing contrivances.

Contagion of Consumption in Railway Cars.[1]

BY EDWARD M. BOGGS.
Civil and Hydraulic Engineer of Redlands, California.

LIVING as I do in a locality which is the Mecca of hundreds of consumptives, I have perhaps seen more of the danger to the traveling public than would be noticed in other localities. I am gratified to see this subject taken up by your able journal, and trust it will not be dropped until a reform is secured.

It is said that Americans more than any other civilized people give offence by the disgusting habit of spitting everywhere, and it is evident that the expectoration of consumptives may be even more dangerous than disgusting. The danger of infection would be diminished if passenger coaches were more generally upholstered in leather or other material less likely to retain the bacilli of disease than is the plush in common use.

But it is in the sleeping cars that the greatest danger exists. Large numbers of persons in the last stages of consumption come to California in search of health, only to expire within a few days after their arrival. Much as we may sympathize with these unfortunates we cannot but feel some uneasiness at being compelled to occupy the berths and use the bedding which are being daily used by such invalids. It is not believed that the sleeping car companies take the care necessary to properly cleanse the bedding—particularly the blankets—supplied to their cars, nor are they likely to do so until forced by public opinion.

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[1] Article on "Tuberculosis in Railway Cars," from a recent number of *The Railway Age*.

It would seem that many a physician sins against the public by advising or permitting a consumptive patient to leave his home and undertake a long journey in search of health, when to the physician it is perfectly plain that his case is hopeless, and that the benefit—if any there be—can be of but a few days' or weeks' duration, and in many cases the fatigue of the journey hastens the end. Physicians should at least explain to their tuberculous patients the danger to others from their careless expectorations upon cars and hotel floors, pavements and other public places, and should urge that as a duty they owe the public they should use due care in disposing of their sputa.

Leprosy in Minnesota.[*]

BY CHR. GRONVOLD, M.D.

NORWEGIANS began immigrating to America more than fifty years ago, most of them going to the northwestern States, Wisconsin, Iowa and Minnesota—where they and their descendants form a considerable part of the population. Some of these immigrants were from parts of Norway where leprosy is endemic, and among them were some lepers. Norwegian physicians, aware of this fact, followed, to study the disease on foreign ground. Among them was Dr. J. H. Holmboe, surgeon in charge of a leper hospital in Bergen. He came in 1864, and found twelve lepers, of whom two had the first symptoms after their arrival here. He thought their health better, probably, than it would have been had they remained in the old home. In 1869–70, Prof. Wm. Boeck, of Christiania, Norway (joint author with Dr. Danielsen, of Bergen, of "Traite de la Spedalskhed on Elephantiasis des Grecs, Paris, 1848," published by the Norwegian Government), published his conclusions in Nordisk. Medicin. Archiv., Band 3,

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[*] This report by the Committee on Leprosy of the State Board of Health of Minnesota came too late for presentation to the late Congress of Hygiene (1891) in London, and was published in the London *Lancet*, with this note by the Secretary: "The report relates in very conservative language the experience we have had for the last forty years with leprosy in Minnesota. In no other State that I know of are all known lepers registered and kept under observation, and all suspected cases carefully examined. The history of these cases has been very thoroughly studied. No further isolation than the use of their own beds and utensils is required, and this their own good sense and that of their relatives, as a rule, secures. It must be understood that the State Board of Health and the Local Boards have abundant power to enforce the strictest isolation, if found needful; but up to date there has not been any occasion for the use of such power, as the disease is limited to the immigrants, and has never appeared in the descendants of lepers, nor in anyone born in the State. It is under constant and careful observation, and has been for the last eighteen years under the care of the State Board of Health. The facts here officially stated will interest the students of a disease about which a good deal more has been written than is actually known."—C. N. H.

No. 1. He found in the three States named eighteen cases of leprosy, of which nine had the first symptoms after their arrival in this country. All were proved to come from leprous families in the old country, except one, in which he suspected hereditary influence, although admitting the possibility of contagion. He ascribes all the cases to heredity, not believing the disease contagious. He thought lepers better off here in respect of their disease than they would have been in their own country. He says: "They have come away from the place, where we see leprosy may originate spontaneously, and which certainly will favor its development when the disposition is inherited. They have settled on fertile lands, where they certainly have to work hard to make a living, but they generally undergo no hardships, as we in Norway understand the term. There is no work that can be compared with that done at the midwinter fisheries in open sea off the Finmark coast, or the hardships suffered while tending the cattle on the high mountain plateaux, which causes so often bring out the latent leprosy."

Since 1870, when the above was written, investigations have been continued in Minnesota as to the number of lepers, their condition, and that of their families. There are medical correspondents everywhere in the State, who report all suspected cases to the State Board of Health, which then makes particular inquiries through its standing committee on leprosy, composed; since 1872, of the writer and the Secretary of the Board. At this date (July 20, 1892) there are sixteen lepers known to live in Minnesota, of whom nine have the anæsthetic and seven the tubercular form of the disease.

Anæsthetic Cases.—In one the disease was first recognized at least five years ago; its duration in the other nine averages nineteen years. The two oldest of this class are, respectively, seventy and seventy-four years of age, and have had the disease more than twenty-three and seventeen years, respectively; while two others, sixty and fifty years of age, have had the disease thirty and thirty-two years.

Tuberculous Cases.—The average duration of the disease in these cases to date is eight years, while in one the disease was first recognized a year ago. The longest duration of the disease in these cases is sixteen and fourteen years, in persons forty and thirty-six years old.

The experience in this country has not been very long, although it already includes several generations. Such as it is, some of its results are:

(1) In no children or descendants born in Minnesota of lepers—there are great-grandchildren—has there been any sign of the disease discovered, although under frequent observation.

(2) Up to date no leper has been born in Minnesota.

(3) In many cases the disease was not recognized for a long time after the arrival of the persons affected in this country—how long it is difficult to state, as the first symptoms are obscure, not noticed, or misunderstood; but in every single instance the leper has sometime had his home in some place in the old country, where the disease was endemic, while in but a single case has infection in this country been suggested, but as that came from a locality in the old

country, that has been for years a nest of leprosy, the possibility is that he got it there.

These facts, as far as they go, seem to suggest that the disease in this country is not so easily acquired as in some other countries. Looking for the cause, some points present themselves for consideration:

(1) New houses, with new furniture and furnishings, in a new country, harbor no sources of infection, and the better economical condition promotes the sense of need for cleanliness, both for health and comfort—a cleanliness which seems in leprosy to be the main reliance against contagion.

(2) The commonly dry and always windy climate of this great inland plateau, with its great and sudden changes of temperature, open as it is towards the Gulf of Mexico, and towards the North Pole, may perhaps make it more difficult for the *materia peccans* to fix itself on persons and things. The hot summer that opens up the pores of the skin and drains the system that way, and the cold, stormy winters acting on the body somewhat differently, may have influence in that direction. That the climate must have some influence in preventing the spread of the disease, seems yet more probable, when we remember that the early settlers, often with a large family of children, lived for a long time in small, close and badly ventilated log houses, closer even than they were accustomed to in their old homes. Even if they did not bring with them such sources of contagion as unclean houses and old furniture, they at least had for some time old clothes, so that it would be a wonder if old and young could have observed the cleanliness necessary to prevent contagion if the effect of climate had not been of a nature to make contagion more difficult. It seems certain that the disease, once established, runs its regular course here as elsewhere, perhaps a little slower.

(3) The change in the physical constitution of people who have lived here some time, the effect of acclimatization and of other influences, may make the individual less susceptible to contagion. In 1888, Dr. G. Armauer Hansen, of Bergen, Norway, the discover of bacillus lepræ, came to this country to study leprosy in the immigrated Norwegians and their descendants. He had taken the position in 1874 that contagion is the only source at present of leprosy, and that the disease is not hereditary. He gives the result of his investigations: *

"I cannot here relate all my observations in detail. I will only tell what I have found in regard to the occurrence, or rather the disappearance, of lepra in America (N. W. States). Of about 160 lepers who have immigrated into the three States named (Wisconsin, Iowa, Minnesota), thirteen are alive, whom I have seen myself, and perhaps three or four more. All the others are dead. Of all the descendants of lepers (and that includes the great-grandchildren of some of them), not a single one has become leprous. This is, in short, the result of my investigation."

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* Virchow's Archiv., Band cxiv., 1888.

The Necessity for a National Bacteriological Institute.*

TRIALS oft are blessings in disguise and the visit of that dread Eastern immigrant, the cholera, to our shores, may be at last of good and not of evil import. It may remind us forcibly of that solidarity of the nations which our isolated position, but too often leads us to forget; it may stimulate us to take some fitting share in the great works of international polity from which we have too long held aloof.

The epidemic scourges of mankind, the contagia by which man slaughters his fellow, have been stimulated in no slight degree by that ever increasing facility and rapidity of inter-communication which forms so essential a part of our modern civilization. Columbus' momentous voyage, which linked two worlds, possibly gave to the Eastern one the dread gift of syphilis.

Five hundred miles a day on water; a thousand miles a day on land; this is the pace that mankind's efforts enable those poisons to attain. And thus the outbreak of a contagious disease in Persia or Eastern Russia is more to be dreaded to-day than was a similar epidemic not a hundred miles from our portals a century ago.

Hence arises the necessity for systematic and concerted efforts to combat the rapid travelling of disease germs and to save mankind, as far as possible, from the effects of this incident of civilization. The older nations have long recognized their responsibility in the matter. Health boards, medical supervision of travel, quarantine regulations, have long been the subjects of the State care and regulation. And we have of late endeavored, with no small success, to follow in their footsteps. But in another and equally important place we have done nothing; we have sat idly by with folded hands, content to let others work for us, or to leave the work undone. The investigation of the contagia, the study of their characteristics, the search for the best means of destroying them or limiting their ravages; this work we have taken no share in. It is wrong to say that this matter is technical—not purely practical, or to inquire whether the research of contagia, which has been the scientific glory of the last decades, has, as yet, given tangible results. Galvani's experiments with frog's legs, and Volo's pile of metals opened a field sterile for decades—as far as practical results were concerned; but a field which, ardently cultivated, has given us the telegraph and electric power, and shall give us things as yet undreamed of. All knowledge is power. The work done on the comma bacillus may not yet have enabled us to save a single case of cholera that would otherwise have died. But who can doubt that it is the beginning of a new era in the relations of mankind to the scourge?

It is time that we took a place in this great work that is worthy of our position among the nations. Epidemics like the present demonstrate the importance to mankind of these things above all others; far above many things to which the community devotes its energies. Individual effort is hopeless; concerted effort can do everything.

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* From *The International Journal of Surgery.*

A central laboratory should be established by the Government equipped with all the modern appliances for the experimental study of contagia, with experiment stations, and with a staff large enough to cover the whole ground and paid well enough to secure the most efficient services. Finally, and above all, such an institution must be entirely free from the taint of politics. The Imperial "Gesundheitsamt," at Berlin, which is conducted by Professor Koch, may well serve as a model of what a modern civilized government should do in this direction. There are, to be sure, a number of laboratories either private or connected with the medical schools, but the workers there are almost invariably men who depend upon active practice or teaching for a livelihood, and who pursue bacteriological research as amateurs. The entire and all the energies of the best men are requisite for this work. Only the government can guarantee these conditions.

Only the government has the force at hand to investigate contagious diseases; and upon the government, representing the entire community, the duty devolves. Systematic and careful work in the investigation of human and animal plagues; work done on the largest scale and with the facilities that only the goverment can supply; this is far more important to the 60,000,000 of this community than petty trade and boundary disputes.—*Salus supremum jus!*

Variety is the Spice of Life.

If vegetable spices give flavor to food and thereby increase its digestibility by adding to its palatability, so, equally, does variety of scene, as a mental spice, give a zest to life that is most potent in the preservation of health and prolongation of life. In this way reasons Anna M. Reed, when, in *Frank Leslie's Popular Monthly* for August, she very truly says that change is the watchword of the day with those who keep a vigilant outlook on the bulwarks of health and view intelligently the results of the wear and tear consequent on close business competitions and the general eagerness for the rapid acquirement of wealth. It is absolute change from that to which we have been accustomed that we want Contact with slow-going, phlegmatic persons is what the nervous, over-strained American requires to relieve the tension of his nerves, and for this purpose our author commends (for those who can afford it), and we heartily endorse the recommendation, a visit, in June of the year, to Norway, for among the easy-going, happy, contented, low-pressure inhabitants of the land of the "midnight sun" will be found the best natural antidote for the exhausted nervous system of the fast-living American.

Norway furnishes the purest of air to invigorate the frame and vitalize the nerves, and not only stamps on the mind the impress of her wondrous beauty, but also leaves her healing, kindly touch on the fagged brain and over-worked body. There is no greater travel tonic than a trip to Norway, and particularly that by steamer to her Northern Cape.

THE United States is the first nation in the world's history to have three cities of over 1,000,000 each.

THE ANNALS
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EDITORIAL

Letters on Health.

(CONTINUED FROM OUR LAST ISSUE.)

THE cholera excitement having for a time subsided, I can now return to the general subject of hygiene and tell you something about the prevention of disease, as I had promised. You ask me if I think that if the observance of hygienic rules was universal disease would be unknown, and I unhesitatingly answer that in time such would be the case. Disease is an unnatural condition; it is not in accord with nature, and it is always the result of an infraction of nature's laws. Theoretically, therefore, it is possible to absolutely eradicate disease, practically, it is not so, because the dismal fact remains that it would be Utopian to expect a universal obedience to nature, and since each man is but an atom of the community in which he lives, so each man is liable to punishment for the natural sins of any other atom of this community.

You are probably familiar with the fact that life is a process of building up and breaking down. Every act of living; every thought, look, motion, every sound heard, every act performed entails the metamorphosis of the tissue engaged in the act, so that it is no longer suitable to form a part of the body. In childhood and youth the process of building up predominates over that of breaking down, because the body calls not only for repair but for growth; during the period of healthy maturity, the balance between waste and repair should be accurate, while as old age comes on the waste exceeds the repair, the disproportion between the two becoming gradually more and more marked, until ultimately the person "ceases to live;" he does not die, so to speak, he simply "ceases to live," because his powers of repair have become exhausted. This is the course ordained by nature, but how seldom it is realized is made evident by the wonder with which we regard our octo- and nonogenarians.

A man should, like Dr. Holmes' famous "One-horse Chaise," be so well made in all his parts that he should run along day after day, frictionless, useful and happy until there comes a time when all of his organs are equally, each with the other, worn out, when he should, like the vehicle of song, simply fade into a condition of non-existence.

Do I expect such a consummation? no, frankly, I do not. You may be born of healthy and long-lived ancestry; your parents may inoculate you with the laws of nature, you may faithfully observe them and may be a typically healthy person, yet, when at forty years of age you are promising yourself sixty more years of useful and happy life, you may, within a few weeks, be under the sod, the victim of some dirty neighbor's filthy cesspool.

While I do not believe in capital punishment, I yet strongly feel that want of cleanliness, whether of person or surroundings, should constitute a crime punishable by the most severe penalties. Dirt that is the result of animal life is inimical to healthy human life, and I am not overly enthusiastic when I claim that cleanliness should be compulsory by statute. If the coming legislature in this State would pass an ordinance defining cleanliness and imposing very severe penalties for its non-observance, such legislation would do more to promote the welfare and happiness of the Commonwealth than any legislation since the days of Penn. In my next letter I will tell you what cleanliness means; it does not consist merely in washing the face and hands, taking an occasional bath and scrubbing the floor and washing the windows; it is a much more elaborate process and, for the benefit of the masses, it should be defined.

Man, then, should not die of disease; he should simply cease to exist because the power of repair that was within him has become exhausted. This is the ideal condition toward which we should all strive, in the hope that by so striving we will, if we do not reach the goal, at least secure for ourselves the greatest possible length of life and the greatest measure of happiness in connection therewith.

Do not tell me that I am visionary when I annunciate such a dogma; there is nothing visionary about it; if I said that I expected such a theory to become a reality then I might be called a "crank," but I do not; I tell you what ought to be, and what nature intended should be the ultimate end of each individual human life, but I also tell you that the perversity of human nature has made such an attainment practically impossible.

If you have a well made eight-day clock; when you wind it up you expect, and rightly so, that it will run for eight days and keep good time; you don't expect to be regulating it all the time, to be helping the pendulum to swing or the spring to expand; to be moving the hands backwards and forwards that they may properly indicate the time of day; you expect that the mechanism of a well-made clock will carry it accurately through its routine of duties for the time designed by its maker. If, then, you look for and receive such accuracy in a man-made machine, why should you be satisfied with less in a divinely made organism. The healthy human being is wound up to run and functionate for at least one hundred years and then to gradually and quietly "run down." If, however, you knock this clock about; if you hang it one day in a temperature of 30° and the next subject it to 90°; if you expose the works so that they will get full of dust; if you jar and shake and knock and batter it, surely you are not so foolish as to expect good work from it. But, it will not be necessary for you to be forever inspecting and watching it; place it in a good location;

see that its surrounding are favorable, and, if it has been well made, the results will be all that you wish.

The comparison that I would draw, I am sure, you have already anticipated. Granting that you are descended from healthy stock, ordinary care without anxious solicitude will guarantee you good health and long life.

Rational hygiene inculcates rather a negative than a positive *regimé*, so to speak; that is to say it implies rather an avoidance than a doing. This for a naturally healthy person, for one who is naturally preordained to health and longevity; such a person I say needs to look out and avoid that which he learns will injure him; his hygiene is an avoidance of ills; while for the man who inherits some constitutional weakness, some tendency to disease, a more active course is requisite; to the avoidance he must add a doing; to the avoidance of that which will deteriorate his health he must add the doing of that which will be calculated to negative the tendency of his inherited weakness; but in avoiding that which he ought not to do he is in reality leading just the kind of life most calculated to strengthen any hereditary defect.

Do you understand me; does what I have said disabuse your mind of the too prevalent idea that a hygienic life means an ascetic life? If so then you have correctly grasped my meaning. I would not have you solicitous about your health; I would not have you always inquiring as to how you feel; I would not have you always trying to fathom the significance of every little temporary feeling of discomfort; I would not have you always inspecting your tongue and thinking about your digestion, pondering over the causes of a temporary wakefulness, or imagining yourself to be the victim of some dreadful disease. Far from it; as a prisoner is always regarded as innocent until proven guilty, so I would have you always regard yourself as well until you are proven to be sick. I would ask you to make a better use of the intellect which distinguishes you from the brute creation than to be ever thinking of yourself. Has it ever occurred to you how comparatively rarely an animal in a state of nature dies of disease, and if you carry along your line of reflection will it not seem to you that this fact is largely due to the fact that the brute creation is not endowed with sufficient intellect to enable it to negative the instincts of nature?

Do I mean then to make the seemingly monstrous and ridiculous statement that intellect is opposed to good health? Yes I do and can prove it, provided this intellect is not properly directed. I mean to say that a misdirected intelligence is a less accurrate guide to good health and happiness than is untrammelled natural instinct. I mean to say that if you take one hundred men and one hundred cows at random, you will not find in the men that expression of contentment, of happiness, of satisfaction with the world at large, so characteristic of good health and internal peace that will be noted in the placid eyes of the cows.

It would be hard to make a cow do anything injurious to her health merely because she is devoid of intellect and has no power, therefore, to antagonize the instincts of nature. Candidly and thoughtfully reviewed, misdirected or misguided intelligence must be regarded as a curse to humanity so far as health is concerned.

The instincts of nature are all conducive to health; the devices of intelligence are the causes of disease. Nature never ordained cesspools, balls, fried oysters, tight lacing, artificial life in cities, business anxiety and overwork, tenement houses, nerve-exhausting rapidity of living, poisonous intoxicating liquors, or that putrefaction should occur in such concentration as to poison the atmosphere we breathe; these adjuncts of civilization are all the outcome of intellect.

It is not from the comparatively few really thoughtful, reflective, intelligent, sensible persons that danger is to be apprehended, but from the great masses who, while endowed with intellect, have yet really less common sense and a much less well balanced instinct than the dog who at once scratches a lot of earth over the discharge that he has deposited on the ground.

Do you not now understand what I mean when I say that all that it is necessary for a healthy man to do is to avoid the causes of disease that he may retain his health; this is all that the cow, the dog and the cat does, yet it proves efficacious. It is not necessary for you to watch every motion, look or word as so many suppose; it is not necessary for you to "live by rule," but it is necessary that you should acquaint yourself with that which will prove injurious and avoid such dangers. Of course you understand that I am speaking now of a healthy person; but also, of course, you must know that there are very few thoroughly healthy persons, and such being the case there must be and is an individual hygiene for each and every person calculated to improve the condition of whatever may happen to be the individual weak spot.

Now, in conclusion, you will notice that this letter has dealt mainly with personal hygiene in its strictest sense. I have written solely of what you as an individual should do; I have hinted at the influence that your neighbor may exert upon your health, but now I would say emphatically that if you would not nullify your own personal precautions you must in truth become your "brother's keeper." Do what you may, be as careful as you can, your precautions may be rendered futile by and you may fall a victim to your neighbor's neglect, to your neighbor's filth.

Hence do I propose in my next letter to define for you what cleanliness means, because I am going to ask you to see to it not only that you yourself enjoy such cleanliness, but I will ask and urge and beg of you to join me in an appeal to the people and in an appeal to the legislature to make compulsory such cleanliness as will vouchsafe to us all an immunity from filth diseases.

(To be continued.)

ACCORDING to Corvisart, the normal pulse rate of Napoleon Bonaparte was under forty beats in the minute.

"IGNORANCE of the laws of health has conscripted more people for the grave than all the battle fields of the world."

Cholera and The Columbian Exposition.

IT SEEMS to us, that it would be impossible to overestimate the importance of the question that is asked in this issue of THE ANNALS OF HYGIENE, by so distinguished an authority as the President of the State Board of Health of Pennsylvania. We wish to call especial attention to his suggestions, because now is the time for a discussion of, and decision upon the vital question that he has raised. The danger is not a visionary one, and the question at issue is whether the danger is sufficiently great to call for a postponement of the exhibition. We are anxious to have this matter discussed in all its phases, and cheerfully offer our columns for this purpose.

NOTES AND COMMENTS

Fluids With Food.

There is a very common impression that fluids should not be taken with our meals—"they dilute the digestive solvents." Water, in some form, is as important at meal time as mastication, and it is as natural to take fluids with our food as it is to eat. They assist in both the separation assimilation of its nutrient elements. While they must not be taken in excess at meal time, or or at any time, we must learn by observation what "excess" means. Learn your gauge, then "eat, drink, and be merry."

Defective Street Paving and Consumption.

Professor Fodor, of Buda-Pesth, asserts that that city occupies a bad pre-eminence among the large centres of population in Europe in point of its mortality from tuberculosis. The yearly average of deaths from that disease in the Hungarian capital is from 500 to 600 per 100,000 inhabitants. Professor Fodor attributes this state of things to the defective paving of the streets, owing to which the atmosphere is charged with an abnormal amount of dust.

Cholera and Filth.

That cholera fads and propagates and gains intensity upon filth is well evidenced by the article on "Cholera and Cleanliness in Russia," in the *Fortnightly Review* for September, wherein the writer says that, from a hygienic point of view, there is not a sound spot in the Russian Empire; food, water, air, clothing, houses, streets, are all contaminated to such a degree that a Russian newspaper lately remarked that a century of effort would not suffice to bring about a perceptible improvement.

Grain and Song.

A writer in *Musical Millions* says he never loses time in looking for a fine vocalist in a country where fish and meat diet prevail. Vocal capacity disappears in families as they grow rich, because they eat more meat. Those Italians who eat the most fish (those of Naples and Genoa) have few fine singers among them. The sweet voices are found in Irish women of the country, but not of the towns. Norway is not a country of singers, because they eat too much fish; but Sweden is a country of grain and song. The carniverous birds croak; grain eating birds sing.

Scarlet Fever and Milk.

The London *Lancet* reports quite an outbreak of scarlet fever at Leyton, in Essex, which was mostly confined to the customers of one particular milkman. Inquiry revealed the fact that scarlet fever was prevalent in the family of the farmer from whom this dealer received his milk. The power of milk to convey contagion is now so well proven that the time is ripe for legislation imposing a heavy fine (so heavy as to be prohibitive), upon the farmer who sends his milk away while there is any contagious disease in his household.

The Cremation of Shelley.

When, in 1822, Shelley, the poet, was drowned off the Tuscan coast, his body was, at first, buried in the sand with quicklime, but, according to T. G. Bonney, who writes in *Frank Leslie's Popular Monthly* for August, the Tuancs law at that time required that any object cast ashore should be burned as a precaution against the plague. It seems almost incomprehensible that a country in which such precautions should be provided against disease by law, should allow itself to become so filthy as was the Italy that welcomed cholera a few years ago.

Water the Best Drink.

The man who drinks freely of alcoholic drinks becomes prematurely old, and shows deterioration of his tissues (says Dr. B. H. Richardson). Alcohol is the great degenerator of the tissues. Alcohol is the great degenerator of the tissues. When he should be a man in the prime ot life, he is an old man. He becomes decrepit in thought and motion, and that love of life which might be perhaps increased as he goes on in years is rendered hopeless, and then comes despair. Every man is safest if he never indulges in that variation of nature from water, which was implanted in the whole animal world. You may make water more palatable by the addition of fruit juices, but there must be no poisonous or deleterious addition to the drink which goes to assist in the construction and activity of the body; our thirst must be slaked with that drink which the great Chemist raises from the ground, from the lakes and the rivers, expands into clouds, allows to distil down from the mountains back again into the streams, and keeps up for us a current of living water, which, like life itself, it is his blessing to bestow.

Proprietary and Secret Remedies.

The Customs and Revenue reports of Great Britain show that the income from patent and proprietary medicines during 1890 was in excess of $98,500,000. The income during 1860 was $210,000. This enormous increase and enormous amount of tax bears only in a moderate proportion to the whole amount of money expended in the purchase of such stuff by a deluded and defrauded public, and not reckoning the doctors' bills and apothecaries' accounts, which are made greatly larger by the derangements of the system occasioned by the use of the unknown medicaments.

Death on the Bicycle.

The London *Lancet* records the death of a young man of 19, who expired suddenly while riding on a bicycle, having but a short time before expressed himself as never having felt better than he then did. He had previously partaken of some "lemon and a dash." At the inquest it was thought that death had been caused by violent exertion, after taking a cold drink, when the body was heated. As the *Lancet* observes, it is a pity that a post-mortem examination was not made, as the information thus gained might have furnished some valuable suggestions to the large number of young men who use bicycles.

Aerial Transmission of Influenza.

As it seems capable of passing almost any and all barriers, it may not seem of very great importance to those who have it, whether or not the so-called "Grip" is capable of aerial transmission; yet it is a question, as the *Lancet* says, of considerable interest. During the past winter the disease prevailed among the attendants of some of the most isolated light-houses in England, which might seem to lend color to the theory of aerial transmission, but careful inquiry revealed the fact that these people had been visited by others from infected localities which would seem to leave the culpability or innocence of the atmosphere a still unsettled question.

Ancient Hindu Vaccination.

At a meeting of the Epidemiological Society (*Lancet*, February 29, 1892), Dr. Pringle quoted a remarkable passage from an ancient Hindu work, which showed that true vaccination was known and practiced in India centuries before the birth of Jenner: "The small-pox produced from the udder of the cow will be of the same mild nature as the original disease . . . the pock should be of a good color, filled with a clear liquid, and surrounded by a circle of red. . . . There will be only slight fever of one, two or three days, but no fear need be entertained of small-pox so long as life endures." Pasteur's attenuation of virus by successive cultures has been applied in India for hundreds of years to inoculations with variolous lymp, which the document in question directed to be taken from "the most favorable cases," and he has series of such selected inoculations in which there was no general eruption, and the local phenomena were scarcely distinguishable from those of vaccination.

Patti's Hygiene.

Mme. Patti, the famous prima-donna, takes no special measures for the purpose of maintaining or prolonging the power of her magnificent voice (says *Good Health*), but relies solely upon those natural agencies which promote the general health: simple food, pure air and plenty of outdoor exercise. A large portion of each day is spent in riding or driving in the mountain roads in the vicinity of Craig-y-Nos, her palatial country home in Wales. She has, as might be expected, a good healthy appetite, excellent digestion, and now at middle age, has, it is said, still the soft, peachy complexion of a young girl.

Religion and Infectious Hospitals.

Considerable agitation is being now made in England as to the propriety of allowing ministers of religion free access to hospitals set aside for contagious diseases. There can be no doubt that ministers can and may, and most likely do, carry the seeds of disease from the hospital with them, but the same may be said of the attending physicians. But, it may be argued, the physician is a necessity; so, it must seem, to all who have not become completely and minutely materialistic, is the minister. The physician and the minister and the nurse may each become the mediums for spreading contagious disease, and the remedy, to our mind, lies rather in personal, individual disinfection than in personal exclusion.

The Manufacture of Freaks.

Victor Hugo says ("L'Homme qui Rit"), anent a sect that practised very sinister prosthetic surgery: "The 'comprachicos' were a bizarrely hideous, nomad association famous in the seventeenth century, forgotten in the eighteenth, and unknown to-day. They were honest men. They opened a door, entered, bargained for a child, paid and carried it away. The comprachicos were Christians and even good Christians, as befits an association which had its origin in pious Spain." Commenting on this statement, the *Medical Standard*, some years ago (Vol. VIII p. 123), said: "The artificial manufacture of 'freaks' by these procedures, however, lasted much longer than Victor Hugo indicates in his quasi-historical remarks. In the early part of the present century, a Dr. Harper was detected in England in the manufacture of 'freaks' for the English and continental market (*Chicago Medical Review*, Vol. III). He twisted a child's head in an apparatus devised by himself, so that it would look permanently over one shoulder. He grafted a rat's tail on a child's nose. He manufactured 'double monsters' by removing from the backs of two children slips of flesh and allowing the wounds to cicatrize together. After the children recovered, they were taught music, dancing, French and Italian. He was particularly strict about their observance of the Sabbath. He had a regular catalogue of prices to showmen, who were allowed a discount when the subject was furnished."—*Medical Record.*

A Good Use for Ice Cream.

Regular readers of this journal are quite familiar with the fact that we do not regard ice cream as a healthy epilogue to a hearty meal, but we can now tell them of a very wholesome use to which this article was recently put by a quick-witted physician. Riding along the street during the hot spell of last month he beheld a pedestrian suddenly overcome by the heat. No ice was at hand, but just then there hove in sight a vendor of "hoky-poky" (ice cream). Quick as a flash the physician confiscated the frozen merchandise, with which he freely anointed the burning body of the heat-struck man with the most gratifying results.

Housework.

To keep the complexion and spirits good, to preserve grace, strength and agility of motion, there is no gymnasium so valuable, no exercise more beneficent in its result than sweeping, dusting, making beds, washing dishes and the polishing of brass and silver. One year of such muscular effort within doors, together with regular exercise in open air, will do more for a woman's complexion than all the lotions and pomades that were ever invented. Perhaps the reason why housework does so much more for women than games is the fact that exercise which is immediately productive cheers the spirit. It gives women courage to go on living and makes things seem really worth while. —*Medical Record.*

Physiology in the Public Schools.

In the report of the Massachusetts State Board of Education recently issued, Mr. G. H. Martin comments upon the teaching of physiology and hygiene under the law of 1885. This law had special reference to the effect of stimulants and narcotics upon the human system, and the instruction was expected by some of the promoters of the law to inculcate in the youthful mind an abhorrence of intoxicating liquors. Mr. Martin arrives, among others, at the following conclusions: The outcome in accurate knowledge resulting from much of the work done is meagre, and out of proportion to the time spent upon it. Many false impressions are left in the minds of the students; physiological details are not suited to young children. However defective the system of instruction may be, the sentiment of the schools is sound—the conviction that alcohol and tobacco are bad things to use seems universal. Where exaggerated notions of the effects of stimulants have been acquired, there is danger of a reaction of sentiment in the light of after-knowledge. Among the suggestions which he makes are, that teachers prepare this subject with more care and see that their statements are true, and by frequent tests ascertain that their teaching is properly comprehended, and that the use of text-books should be limited to the older pupils. The moral and social effects of the abuse of intoxicants should be made more prominent, and abstinence be advised for other reasons than such as concern only the body.—*Boston Medical and Surgical Journal.*

Diseases Improved and Cured by the Climate of Egypt.

Dr. Frederick Peterson, writing in the *Medical Record*, says that this climate is invaluable in all manner of chronic diseases of the respiratory organs; for delicate lungs or incipient phthisis, for rheumatic affections, for convalescents from any acute disease. As Dr. Sandwith aptly remarks, the most important question really is to determine what kinds of patients *not* to send to Egypt. As to this, each consulted physician must decide upon the merits of individual cases. It is almost needless to say that moribund phthisical patients, or invalids with apoplectic tendencies, should not be sent to Egypt.

There is no doubt that a voyage on the Nile, or a residence in Cairo, Gizeh, Helouan, or Luxor, or camp life in the desert, is a valuable indication in many forms of nervous and mental disease, such as neurasthenia, insomnia, overwork, hypochrondriasis, hysteria, melancholia simplex, and other mild forms of incipient or threatened insanity. There is no better climate for intractable rheumatic and malarial neuralgias, sciatica, and the like.

Ancient and Modern Purification of Water.

The *New York Medical Journal* remarks that from our state of self-felicitation upon the wonderful advances we have made in science there sometimes comes a rude awakening to the fact that, after all, we have only done what was practically accomplished centuries ago. The demonstration by the microscope of disease-producing germs in drinking water, and the discovery that such germs can be removed by filtration or utterly destroyed by boiling, have been heralded abroad as among the glorious achievements of modern science. The absolute knowledge upon which modern sanitarians base their doctrines may not have been attained to by the ancients, but the theory that water might contain elements dangerous to health, and the methods of eliminating or destroying them, are certainly not new. Dr. Éloni-Bey, medical inspector-general in the government colleges of Egypt, has given in the *Lyon médical* some quotations from a manuscript by Ebn-Radouan, an Arabian physician of the eleventh century, upon the preparation of water for alimentary purposes. They show that over eight hundred years ago the dangers of decomposing matters in water were well recognized and provided against in practically the same way as by our modern sanitarians.

Ebn-Radouan recommends taking the water of the Nile from places where the current is swiftest and contains the least decomposing matter, allowing the foreign material to subside, decanting the clear water, and further purifying it by means of heat, filtration and the addition of certain aromatics.

Although it was not the custom of physicians in the time of Ebn-Radouan to give the reasons for their instructions, it is evident that he was in advance of his day in sanitary science, and that without the chemistry and instruments of precision known to modern science he arrived at practically the same conclusions as those held by sanitarians of the present time and issued the same wise instructions.

The Arrow Poison in the New Hebrides.

M. Dantec has examined and experimented with the arrow poison used by the natives of the New Hebrides. He finds that it contains neither vegetable poison nor serpent virus, but consists of earth impregnated with vegetable matter taken from marshy places and containing Pasteur's *vibrion septique*, or bacillus of malignant œdema and also the bacillus of tetanus. If the arrows have been kept a long time or have been much exposed to the sun the *vibrion septique* may have been destroyed; the danger then is from tetanus. When the arrows have been freshly prepared and the *vibrion septique* is still active a wound from them causes death in a guinea-pig from septicæmia in from twelve to fifteen hours; tetanus, which takes longer than that period of time to develop, does not under these circumstances show itself. It is interesting to remark that the horse is unknown in these islands, consequently the theory of the equine origin of tetanus would seem to be negatived by these researches.

The Ideal Family Physician.

The Hon. Thomas F. Bayard recently addressed the class at one of the medical colleges in Baltimore, having for his theme "The Lawyer and the Doctor." It has been his fortune, he says, to be thrown in contact with not a few medical men who have been "as the salt of the earth" in their respective communities. A man who is already eminent by reason of his natural endowments may be said to double his talent by becoming a physician. "It has been my personal fortune," says Mr. Bayard, "to know such a man. It has been my privilege and delight to accompany him in visits where his only medicines were the personal presence and conversation of the man himself. He had shared and had lessened their anxieties; counselled the wayward; cheered the weak-hearted; had rejoiced with them that rejoiced and wept with the weeping. And I have seen such a man so surrounded by an atmosphere of love and trust, holding as it were the heartstrings of a family in his hands, their guide, philosopher and friend; and then I realized what a moral force in society the profession, properly comprehended and properly followed, was capable of exerting, and how relatively small a part of its usefulness was the administration of medicine."—*New York Medical Journal.*

The Hygiene of the Teeth.

The value of preventive measures against the attacks of disease cannot be too strongly insisted upon, and one class of case where these measures are to a great extent within the control of the individual is in regard to the teeth. All caries of the teeth begins from the outside, no such thing as internal caries having ever been demonstrated; hence, if the surfaces could be kept absolutely clean no decay could take place, however poor the texture of the teeth. This is of course impossible, but much toward such a desirable end can be attained by attention to hygienic rules. Parents often ask their dentists and medical attendants with reference to their babies: "When ought teeth to be cleaned?" The answer assuredly is: "As soon as there are teeth." A very small toothbrush charged with some precipitated chalk, flavored with an aromatic drug to make it pleasant, is perhaps the best means—not a towel, which only removes the secretion from the labial and lingual surfaces and not from between the teeth, where decay is most rife. Yet how few children's teeth are so treated, and how rarely the habit of doing it for themselves when they are old enough is inculcated. But if it be acquired, the very desirable result is likely to follow of an immunity from dental trouble—at all events to any large extent. Later on something more can be done by passing a piece of waxed dental floss silk, which can be obtained of most chemists, between the teeth every day, and the value of this can be easily demonstrated after thoroughly using the toothbrush by passing the silk between the teeth, when a certain amount of accumulated matter will be brought away. "Do toothpicks do harm or good?" is another question often asked. They may do harm if abused, undoubtedly, by causing irritation of the gum between two teeth and its subsequent absorption; and, if made of wood, splinters are liable to be left behind, which have in many recorded instances caused even the loss of a tooth; but used judiciously they are of great value in routing the attacking forces in caries—namely, accumulations of food and mucous secretions. It has been urged against them that they might dislodge a stopping. But if a stopping is so insecure it must be faulty, and the sooner it is replaced the better, for decay, due to the impossibility of keeping the surface clean, must be going on underneath it.

Heredity.

That heredity is a cause of disease admits of no doubt. It is not the disease itself, but the tendency thereto that is inherited, just as other physical peculiarities are.

Readers will remember the horseshoe vein on the forehead which was the badge of all the tribe of Redgauntlet; and there is a well-known family in the south of France which for more than three centuries has boasted a white lock of hair. The Bourbon nose, and the thick lip of the Hapsburghs, are other instances in point.

Consumption, gout, insanity and cancer are the diseases which show the greatest tendency to run in families. Of the hereditary transmission of gout nearly every noble family in Europe can show the most conclusive proof. With regard to cancer the case is not so clear; but statistics prove that heredity can be more or less distinctly made out in a considerable proportion of those who fall victims to the disease.

The Bonaparte family furnishes a remarkable example of the hereditary transmission of cancer. One of the parents of Napoleon I died of cancer of the liver or stomach. He himself died of cancer of the stomach, which also proved fatal to his brother Lucien and to his sister, the beautiful Pauline Borghese.

A hereditary tendency to disease may not show itself till an advanced period of life, as Professor Huxley, in his charming autobiographical sketch has lately told us that a peculiar movement of the hands which was habitual to his mother has recently shown itself in him.

The moral to be drawn from these facts is that if a man has reason to suspect that he inherits a tendency to a particular disease, he should be careful to avoid exposing himself to the conditions which favor its development. He should also be mindful of his posterity, actual or possible.

Most people use their bodies as if they were their property in fee simple. This is hardly fair to their descendants. A man should undoubtedly treat his body as though it were strictly entailed, and the rights of his heirs should be, as far as possible, respected.

If the attack of the disease can by any means be kept off, it is possible that in time the family taint may be eliminated.—*Sir Morell Mackenzie.*

Children and the Use of Butter.

Mr. Jonathan Hutchinson is one of the most eminent of English physicians, and since we find the following plea for the liberal use of butter by children in the journal presided over by him (*The Archives of Surgery*), we reproduce it, not that we are ready to unqualifiedly endorse the views expressed therein, but because we are ready to admit that we do not know quite everything, and that Mr. Hutchinson may possibly be correct in these views:

> No dietetic reform would, I believe, be more conducive to improved health among children, and especially to the prevention of tuberculosis, than an increase in the consumption of butter. Our children are trained to take butter with great restraint, and are told that it is greedy and extravagant to eat much of it. It is regarded as a luxury, and as giving a relish to bread, rather than in itself a most important article of food. Even in private families of the wealthier classes these rules prevail at table, and at schools and public boarding establishments they receive strong reinforcements from economical motives. Minute allowances of butter are served out to those who would gladly consume five times the quantity. Where the house income makes this a matter of necessity, there is little more to be said than that it is often a costly economy. Enfeebled health may easily entail a far heavier expense than a more liberal breakfast table would have done. Cod-liver oil costs more than butter, and it is besides often not resorted to till too late. Instead of restricting a child's consumption of butter, I would encourage it. *Let the limit be the power of digestion and the tendency to biliousness.* Most children may be allowed to follow their own inclinations, and will not take more than is good for them. The butter should be of the best and taken cold. Bread, dry toast, biscuits, potatoes and rice are good vehicles. Children well supplied with butter feel the cold less than others, and resist the influenza better. They do not "catch cold" so easily. In speaking of children I by no means intend to exclude other ages, especially young adults. Grown-up persons, however, take other animal fats more freely than children do, and are besides allowed much freer selections as to both quality and quantity. It is not so necessary to raise any clamor for reform on their account.

We have italicized one sentence in this quotation which we think should be carefully heeded. It is, we think, a property of butter to cause biliousness, and if we stop short of this point, of course, we do no harm, indeed, it is wholesome; but, with the craving for butter so common to children, we imagine that its *unrestricted* use would, in most cases, carry the child beyond the danger line.

Boil Your Ice.

"Boil your ice." Such is the counsel given by Dr. Daremberg to the Parisians in view of impending cholera, and the lesson which underlies the somewhat quaint saying contains the pith of the advice which is necessary for the prevention of cholera. It is now many years since we found that freezing does not destroy the ordinary contagia of the diseases of man. We learned from Massachusetts of the first epidemic of enteric fever, which was traced to the use of ice from a sewage-polluted pond; and only the other day Dr. George Turner presented to the London County Council a most interesting report on the prevalence of enteric fever in the East end of London through the consumption of "ice-creams," bought from itinerant Italian vendors, whose ingredients were stored under conditions that leave but little doubt as to where the infection came from. "Boil your ice," being enlarged in the scope of its application, becomes for us "cleanliness in all things"—in food, in drink, in all our surroundings. This is the true means of cholera prevention.

A Healthy Drunk.

From the *Bottler's Gazette* we learn that the latest craze in Boston is the compound oxygen drunk, reports say. There are a half dozen establishments in the Hub that are doing a rushing business in catering to this form of dissipation. They are patronized, exclusively, by men and women of the highest social position, the women outnumbering the men. The sensation produced by the inhalation of compound oxygen is described, by those who have tried it, as highly ecstatic. There is nothing known to the science of medicine or pharmacy that equals its delights. Big quaffs of it that fill the lungs' air cells are said to set all the nerves of the body a-tingle and the brain in a delicious whirl. The effect lasts all the way from five minutes to an hour, according to the person, and is said to have no apparently deleterious results, except a peculiar mental collapse, from which the dissipator doesn't recover for several hours. While under the strange influence of the stuff one feels completely lost to the world and oblivious to everything terrestrial. That is the reason it is called the compound oxygen drunk.

Use of Teeth.

The dentist is doing a constantly increasing business. He probably has twice as much work now as a generation ago. The inference is either that people are paying more attention to their teeth or that the teeth of the present generation are poorer.

Probably each of these suggestions is true. Dentists agree that teeth decay earlier and cause more trouble to the average individual than formerly. Some pessimists may attribute this to the decadence of the race. This is not true because the average age of the race is increasing, as proved by the statistics of life insurance. The simple fact is that conditions of living have changed, and the teeth do not get the same nutriment as the same service as formerly.

It is scarcely a generation since fine flour became the household bread staple. The old brown bread with its hard crusts contained good food for teeth and gave them good exercise. The boys and girls of to-day know nothing about crusts. If by chance our improved ovens happen to make any, they never appear on the table but are thrown away or transformed into soft puddings.

The blacksmith's arm grows round and strong from use and exercise. To insure their durability and permancy the teeth need something to do. The modern boy knows nothing about chewing hard things unless he gets hold of peanut candy, and then he is apt to break his teeth, the effort is so unusual.

Babies, as soon as they have some teeth, ought to have something to chew. Instead, the mother soaks up her child's already soft bread, just the same as in its mewling infancy, and gives the little grinders nothing to do. Dr. Johnson's Educator crackers have done something for the modern youngster, but thousands never heard of them. They are a whole-grain cracker, delicious and toothsome—well worth chewing for the result obtained after the effort.

Very hot and cold drinks destroy the vitality of the teeth. Their use has greatly increased and constitute another reason why teeth do not last as they did formerly.

Those who have the care of growing youngsters will do them a life-long favor if they see that their food contains something to chew, and that they are instructed to make a thorough job of chewing it, for it is seemingly a natural tendency of hurrying childhood to swallow everything whole which can possibly be so treated.—*The Healthy Home.*

Longevity; The Natural Duration of Life in Man.

This subject has been written upon to some extent in ancient and mediæval times, and has recently received not a little attention from scientists. The natural duration of life, excluding the question of external influences, has not varied essentially from the time of reliable history. Cicero evidently considered seventy years an old age. Unless in lower forms of organization, as in cells which propagate by division, the duration of life is limited, and within certain, comparatively speaking, narrow bounds. Buffon believed that the natural life of man and animals was some multiple of the period at which they attained their growth, and the same view had been accepted by Flourens and others, but the period of growth and the multiple given by different writers has not been uniform. Proximately, however, physiology gives man a life of one hundred years. Individual instances in which this period has been considerably exceeded are not unknown, although in many traditional instances of the kind there was room for doubt. The cases of Parr, Desmond and Jenkins, if entirely reliable, would show the possibility of human life being extended beyond a century and a quarter, and indeed beyond one hundred and fifty years.

In army records only about two persons of a million men attain a height of seven feet, yet now and then one reaches the extraordinary height of eight feet, so that by analogy it was not improbable that here and there a person reached the great age of one hundred and twenty-five years or more. A physician, member of the Cumberland County Medical Society for seventy-four years, still living, was born in 1792. The English and American censuses of recent years have given a number of cases of centenarians.

By collective investigation on the part of English physicians, undertaken at the suggestion of Professor Humphrey, a list of nearly 900 cases of persons of great age, seventy-one above one hundred years, had been published, in many of which the age could be vouched for. In these instances questions had been answered with regard to habits of life, weight, etc.

The following facts were emphasized by the essayist's studies: That a prime requisite of long life was to start with a good inheritance, a body, so to say, which was wound up and sent into the world to run a long period; a body well developed, the organs proportionate; avoidance of excess of food and drink, and of general over strain, or over strain of special organs. While the duration of life among physicians has not been of the greatest as compared with other pursuits, yet there is no reason why each member of the medical profession might not so live as to attain to the full number of years allotted to man, if his inheritance and early training permitted, and in no other pursuit could one feel more assured of the good-will and respect of the community in his last days.—*Medical Record.*

REV. T. T. MUNGER, D.D., says: "A good body well cared for and well used is not only on the side of virtue, but is one of its chief fortresses," the greatest of all helps towards chastity.

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PLACE OF MEETING,

Supreme Court Room, State Capitol, Harrisburg, unless otherwise ordered.

TIME OF MEETING,

Second Thursday in May, July and November.

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COMMUNICATIONS

Correct Gymnastic Positions.

BY HANS BALLIN,
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It is one of the main requirements in gymnastic work that a position should be correct. A carelessly executed exercise is of little or no value and leads often to the contrary of what is aimed at. He who practices gymnastics unsystematically, or he who teaches with a point in view to attain certain exercises and feats independently of position and posture of the whole body, gives evidence that he has not con-

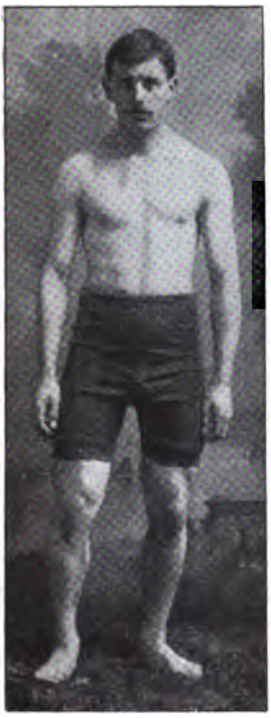
FIG. 1.

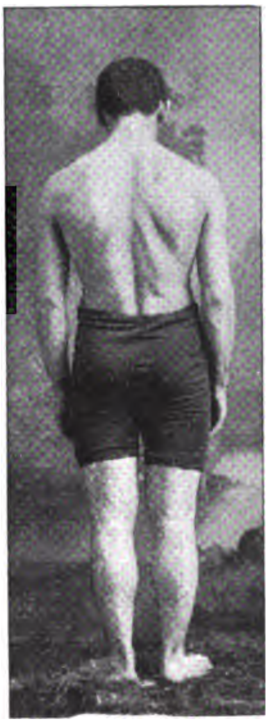
FIG. 1 a.

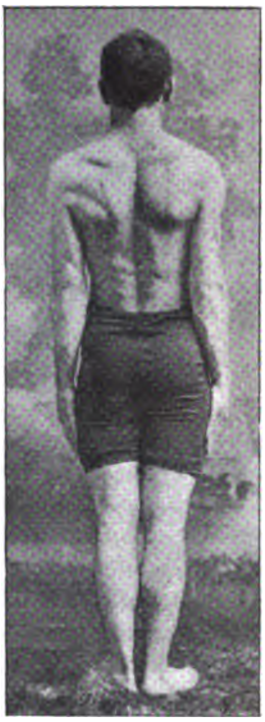
FIG. 1 b.

ceived the right spirit of physical culture. We meet, however, with the fact that many gymnasts who exercise at random in the gymnasium or at home, or indulge in some manly sport, pay little or no attention to the execution of the movement as long as they have carried their point. They will jump and are proud when they clear the rope at sixty inches, and they care very little that they did so in the most ungraceful manner. They will perform a giant swing on the horizontal bar, having their feet wide apart, keeping their body flabby and without any vigor and attitude, which does but little to develop muscular control.

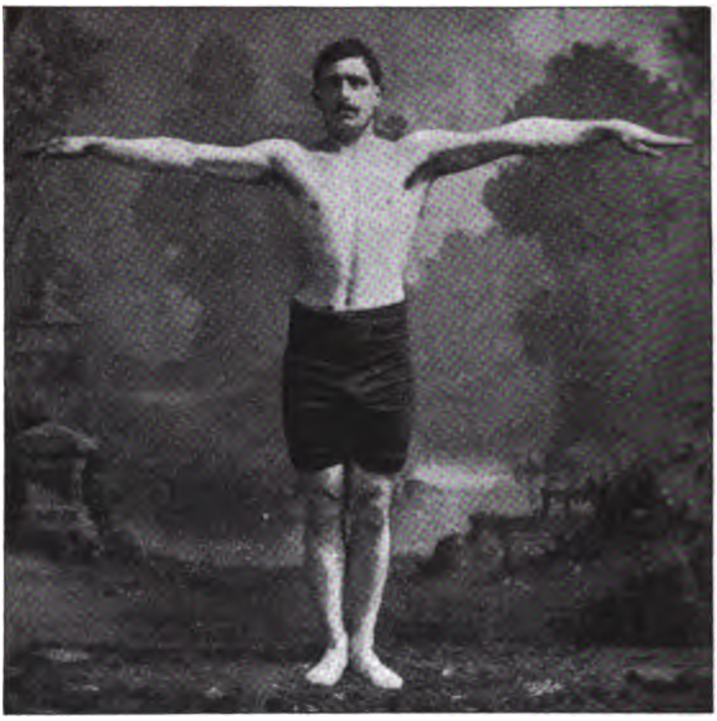

FIG. 2.

Now there may be some who claim that it matters very little how a man jumps as long as he exercises his body, and if he even succeeds in jumping to an enormous height, he will be nevertheless the champion jumper. A man who will dare and accomplish the giant swing, will undoubtedly be considered by his comrades a daring fellow, who outdoes them completely.

This is all true, they will be the boys who will find their admirers. But physical exercise aims at more than to become a champion of feats; it must educate the body so it will be the servant of its supreme master—the mind; and, furthermore, must develop the human form symmetrically. This can only be attained by paying strict attention to the position and carriage of the whole body while performing physical work.

An exercise which requires principally the action of the muscles of the legs is of little or no account when the trunk and arms are in an uninteresting and careless posture Experience teaches us that it takes a long and tedious course of practice for a person to become master of all groups of muscles in order that he will be enabled to move them at instant command. Complex motions make it still more difficult for co-ordinational action.

An untrained gymnast will lay all stress on the main features of the exercise, and having accomplished this is unconscious of the appearance and correct execution. A boy who tries for the first time to climb a ladder, going hand over hand on the underside of it, will sprawl with his legs like a frog out of water.

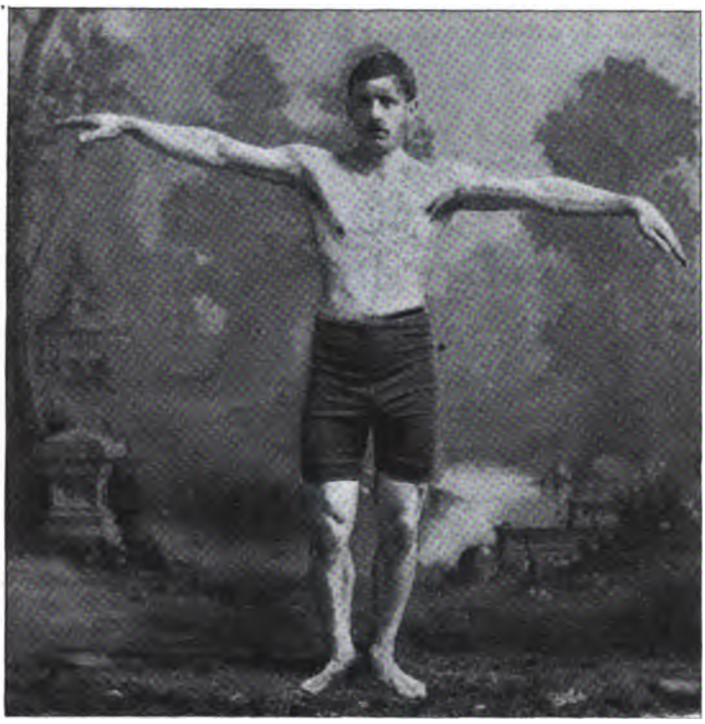

FIG. 2 a.

It can often be proven that these champions ot some athletic or gymnastic sport act surprisingly and clumsily when they try for the first time to execute some simple calisthenic movement.

An exercise correctly taken must at all times be an exercise of the whole body. Whenever a pupil is not master of all parts of the body, there is somewhere an obstruction, which must be overcome by practice. These hindrances to the performance of an exercise indicate the probability that the teacher has advanced too rapidly or unmethodically. The method must aim to conduct the scholars through the consciousness of bodily evolution by practice to the unconscious action.

We have to deal principally with the bad habits of inheritance, which can only be overcome by slow, progressive, systematic practice. A teacher will begin where he finds his pupils' natural gifts most developed, which furnish him with the rudiments of physical culture. The teacher must have it constantly before him to cultivate and mature the *whole* body, not parts of it. Parts, put to action, must be only the means for the development of the whole system.

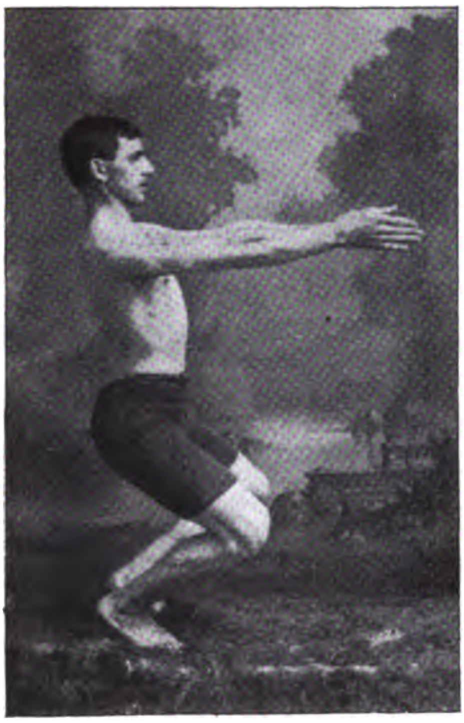

FIG. 3.

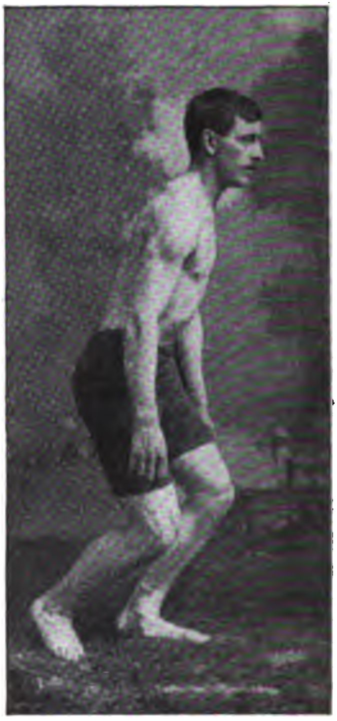

FIG. 3A.

The erroneous assumption that one can exercise parts of the body, closely defining the physical effects on them, is to be rejected as a gross physiological mistake.

The more a person is lacking control over his muscular system, the more is he liable to bring into action, unnecessarily, those muscles which it is easiest for him to govern. If he, therefore, had to exercise with his legs, and has better command over the muscles of the arm, they will do the unnecessary movements, which make a person's actions awkward in appearance. This awkwardness is most effectually fought by laying stress on the carriage and posture of the whole body, thus recognizing the truism that the whole muscular system is an unbroken tissue, one muscle is closely allied to the neighboring one, and all are supplied from a common nerve-centre.

The accompanying cuts illustrate correct and incorrect positions. Those teachers who are employed in the public schools to teach gymnastics, may derive some visible facts which may induce them to pay more strict attention to the position of their scholars. They must consider the standing or fundamental position an exercise in itself.

Figure No. 1 is frequently met with and must (no matter how often you have to tell your scholars) not be permitted. Out of 1 a and 1 b, one can plainly see how little in one and how much in the other the muscles do actual work. Although this muscular tension, as represented in 1 b, may appear exaggerated, the subject of the illustration being a strong man, it will prove true in proportion to the strength of the child.

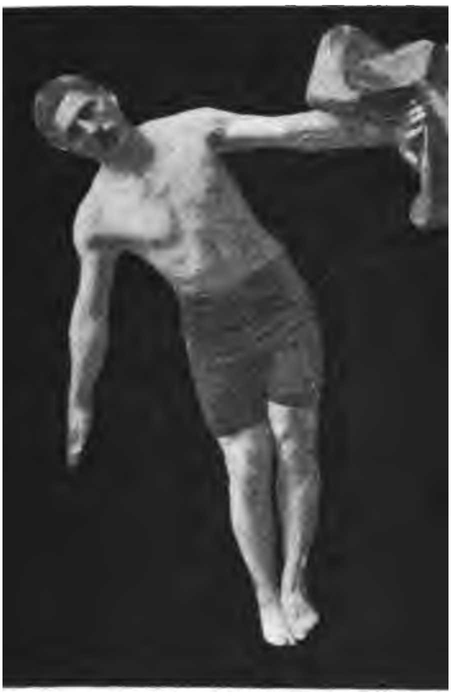

FIG. 4.

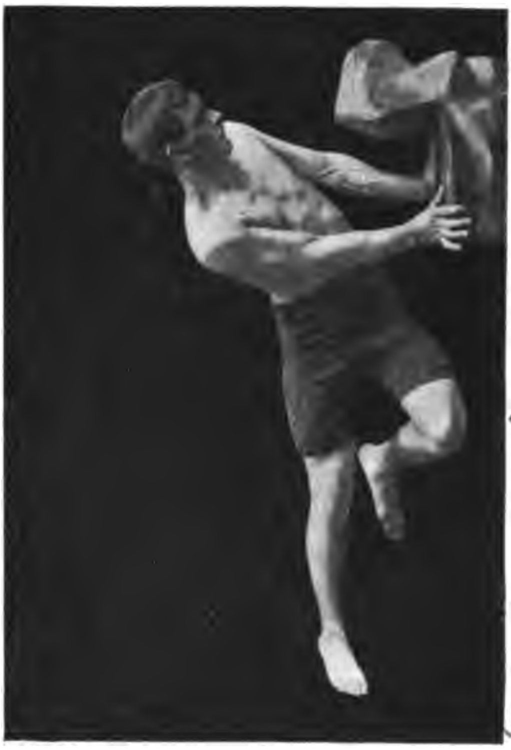

FIG. 4a.

Fig. No. 2. Arms raised sideward from a fundamental position, shows still more plainly that if we pay attention to the details of an exercise that not only the muscles of the arms, but of all the body are engaged, as in this case.

Fig. 2 a should represent the same as Fig. 2, and one who tries can see that not only the arms but the whole body is in a state of relaxation. Furthermore such an exercise often executed without correction will destroy the pupil's sense for symmetry and beauty of form and grace.

We spoke above about jumping as an exercise to cultivate the mental and physical forces of man, and not to train champions. Fig. 3 represents the jumper immediately after reaching the ground. He has full control over his body, and certainly must have acquired and possessed this self reliance during the act of jumping. He was trained to use his body unconsciously; his mind is at liberty to be ready to perceive obstructions, and he is at the same time prepared for a new departure.

In a jump, as executed in Fig. 3 a, where the person lands on his feet in a "don't-care" posture, he would not be aware of any danger or difficulty that might obstruct his leap.

No. 4, a flank vault, as it should be, and No. 4 a, as it should not be, materially illustrate the same as 3 and 3 a. In the exercise, as represented in 4 a, the person has no co-ordination over those parts of the body which are not concentrated by his will power. After he has jumped from the ground his left arm does most of the work, and subsequently he is not able to master the other parts, for he is not trained systematically and has advanced to this exercise too rapidly.

Hunting Health and Bears.*

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IT was Tupper who said:

> " How gladly would I wander through some strange and savage land,
> A lasso at my saddle bow, a rifle in my hand,
> A leash of gallant mastiffs bounding at my side,
> And for a friend to love, the noble horse I ride."

At the special request of our esteemed friend, Dr. Joseph F. Edwards, editor of THE ANNALS OF HYGIENE, we will attempt to contribute something in reference to the hygienic advantages obtained by those who, weary and worn out by the duties of an exacting practice, or from the daily wear and care of a humdrum business life, have their vitality exhausted and seek to regain it by spending a vacation in the Rocky Mountains "hunting health and bears."

The opportunities afforded by the great mountain chains and plateaus of the West for regaining lost vitality, the result of long continued mental and physical tension, and of overwork and close confinement in crowded cities and illy ventilated buildings, are practically inexhaustible. From personal experience, and without mental reservation, we can say that the man who will break away from business duties each year, and spend from six to eight weeks during the latter part of the summer on the great plateaus of the West, or climbing the towering peaks of the Sierra Nevadas, or traversing the picturesque canyons of the Rockies, will return home feeling as if "he had been borne again:" and instead of the sluggish pulse, the sunken eye, the weary brain, the flabby muscles and the poor digestion, he will come back buoyant with life, with a bounding heart pumping fresh and invigorating blood into all parts of his economy; he will find his flabby muscles have become elastic with renewed vitality; his sunken eye will be sparkling with life and hope; his brain will be active and energetic, and his appetite will be as omniverous as a country saw mill, while his former broken and nervous sleep, that made the nights a torture instead of a pleasure, will have disappeared and have been replaced by sound, refreshing slumbers, the consequence of returning health and renewed vitality and vigor, and in the language of Thompson he can truly exclaim,

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* Written by special request for the ANNALS OF HYGIENE.

"The sap of my life goes upward,
Obeying the same sweet law
That waters the leaves of the maple after a thaw."

BEST TIME TO GO.

If you desire to see California in her beauty and splendor, the latter part of winter and early spring is the most desirable time to visit that semi-tropical country; for at this season of the year she is robed in her handsomest garments of green, and is bedecked with a profusion of the most gorgeous flowers; her luscious oranges will then be ripe, and the beautiful orange groves ladened with their famous hymeneal flowers.

On the other hand, if you desire to visit the mountains and plateaus, we would advise you to go during the latter part of July, August, or not later than the first of September, when the climate is dry, the air pure, cool and bracing, and when camp life can be enjoyed without having to endure the hardships which are necessary during the latter part of the season.

WHO SHOULD GO.

We are not advising this method of recreation to the poor, unfortunate consumptive who may be heard night after night on the sleeping cars of California coughing his life away while he is seeking to regain it. But we do advise it to those who need a change and relaxation from business cares, who are not sick but are simply worn out and weary from the long continued mental and physical strain in the various business avocations of life; men who are physically able to ride the native cayuse day in and day out, climb the rugged mountains, carry a Winchester rifle, and a knap-sack, if necessary; who can wade rivers, straddle fallen timbers, march through underbrush and across swamps with no bad results further than becoming tired and at times possibly a little uncomfortable; men who can sleep out at night with nothing but the firmament of heaven for a covering; who can relish a breakfast of bacon and "slap jacks," a dinner of fried venison and bread baked in an old fashioned " Dutch oven," and a supper of speckled trout and hard tack, and eat them not because they have to, but because they are hungry and enjoy them.

HOW TO OBTAIN THE BEST RESULTS.

In order to obtain the best results from a six weeks " roughing it," in the Rocky Mountains and elevated plateaus you should go with some *definite object* in view; for instance, hunting bear, mountain lion, elk, deer, goats or mountain sheep, as your taste may direct. If you are too feeble or timid to " rustle " for large game, then go prepared to hunt grouse, prairie chicken or " fool hens," of which there are a great abundance. To break the monotony, take your fishing tackle with you and enjoy angling for the speckled trout with which the numerous mountain streams are well supplied. One of the finest sports you can find is shooting salmon which are to be found going up the mountain streams during the latter part of the summer, and which furnish very exciting amusement for those who are seeking fun without danger or personal exposure.

Do not take your vacation without some definite aim beyond that of seeking health. Go for some *special purpose;* this will occupy your mind, excite your ambition, increase your vigor and power of endurance. If you do this, mark my words, you will find your health and strength returning like magic.

A FEW SUGGESTIONS IN REFERENCE TO THE PRELIMINARY PREPARATIONS FOR CAMP LIFE.

In preparing to spend a vacation in the mountainous regions of the West, it is well enough to make a few preparations before you start, such as procuring a heavy duck hunting suit which should be reenforced by at least two suits of heavy underwear, and one or two coarse, woolen shirts, a broad-brimmed felt hat, and a pair of light leather gloves. In selecting this wardrobe great care should be taken not to procure any goods with bright colors, as they attract the attention of game much more readily than those colors which blend with the foliage of the country in which you expect to hunt. A good, substantial pair of high-topped boots with heavy soles well nailed, will be found much more serviceable than hunting shoes or rubber boots. If you intend to climb through the Rocky Mountains the nails in the soles are a very great help, and will not only prevent you from slipping, but are a valuable protection to the soles. The tops should be well up to the bend of the knees behind, and above the knees in front in order to protect them when you get down on your "marrow bones" which you will find, if not a habit now, soon becomes one in camp life. The less material you carry with you, the better, although it might be well to take an extra suit of clothing and a heavy overcoat in case you should encounter stormy weather.

In addition to the above wardrobe you should take with you one or two good rubber blankets, and two or three army blankets, the former to put over and under you, and the latter to keep you warm. A sleeping bag made out of heavy duck just the size of the body will dispense with the necessity of carrying rubber blankets, and which with a couple of army blankets will answer all ordinary purposes, and come in handy for packing clothing, bedding, etc., when on the march. Unless you visit the mountains late in the season it is seldom necessary to carry a tent, as the ordinary wagon cover can be stretched over a ridge pole and be used for that purpose.

If the object of your hunt is large game, such as bear and elk, you should procure a good 50–110 Express Winchester rifle, a good hunter's knife, with a blade at least seven inches long, a cartridge belt that will hold from thirty to forty rounds of cartridges, and a good 45 caliber revolver. For protection in close quarters it would be well to supply yourself with a few dozen shells loaded with explosive balls: these are a very great safeguard in times of danger, especially when you fail to mortally wound a grizzly or a "silver tip" with solid shot.

If your object, however, is smaller and less dangerous game, your artillery can be reduced in size to correspond. A 44–90 Winchester will answer for deer and antelope, and all you need for prairie chicken and grouse is a good shot gun, whilst you can kill "fool hens" by the dozen with a club.

With the above equipments you are now ready to proceed to some western railroad point and there "outfit" for the mountains. To properly "outfit" each hunter should have a good cayuse that is accustomed to the mountains, mounted with a good Mexican saddle and a bridle, a lariat, and supplied with a gun scabbard (unless you have one for your gun) and a pair of spurs. Enough of draught-horses or mules with drivers and wagons should be secured to carry and care for the supplies. As far as possible, in selecting your teams you should see that the horses are used to "packing" through the mountains, and that your drivers are able not only to take care of the horses and wagons, but to properly pack them when necessary. A good cook should be secured, one who is familiar with camp life and camp cooking. And last but not least, if you are not familiar with the country, a good guide should be employed; this is the most difficult part of the paraphernalia to obtain in the whole "outfit." Every guide you meet will tell you that he knows the entire country, and can take you where you can get "dead loads" of game. He will endeavor to make you believe that bears are as thick as grasshoppers in Kansas, and elk as plentiful as fleas in a country pig pen, and that he knows more about the mountain trails and the proper methods of "bagging" game than any other living man. Beware of this flattery, however, or your anticipations will be greatly embarrassed long before you return from your hunt. The average guide is always ready to "work the tender foot," and consequently needs watching.

In fact, those who have any experience in camp-life on the mountains, we would advise to go without a guide unless they are fortunate enough to secure one who is reasonably honest and who will make a contract with them to take them where there is game, and then charge them a certain definite price not to be paid unless they obtain a certain amount of a specified kind of game. Otherwise they are liable to be raced over a gameless country seeking for that which has long since been gone, while the guide visits his sheep ranches and closes sharp contracts for sheep and mules at a good profit, whilst you are paying the fiddler without getting a chance to dance. Then, in the language of the poet, I would go

> Without a guide, yet guided well, young, buoyant, fresh and free,
> Without a road, yet all the land a highway unto me,
> Without a care, without a fear, without a grief or pain,
> Exultingly I thread the woods, or galloped o'er the plain.

In selecting your camp outfit you should procure an old-fashioned "Dutch oven," an ordinary frying pan, an iron pot and one or two tin buckets; each man should be supplied with a tin pan and cup, a knife and fork, and a few extra tin vessels which come in handy for mixing "slap jacks" and the like, preparatory to cooking, and to put the "grub" in after it is cooked. You should take with you flour; potatoes, bacon, onions, coffee, sugar and canned fruit; you will find a few boxes of sardines and sweet chocolate of great advantage, especially when you are out on the mountains and are unable to return to camp in time for dinner; they are light and take up but little room, and a box of sardines and half a cake of chocolate will make you an excellent mid-day lunch, and which you will find sticks to the ribs like gum to a cherry tree. A few cans of packed butter will be found very palatable, but I would not advise you to load yourselves down with a large variety of provisions, especially if you expect to "pack" any distance through the mountains. But you can add to this bill of fare, to suit your taste, as we have only endeavored to suggest a few essentials which will be found of great value when in "active service." They may appear a little crude at first to those who are in the habit of dining at Delmonico's or other similar resorts; but after spending a few days in the mountains you will relish them better than the finest dinner you ever ate at the most sumptuous banquet.

OUR PARTY.

After "outfitting," and ready to leave Payette, Idaho, a thriving village on the Union Pacific Railroad, our party consisted of Dr. W. J. Galbraith, chief surgeon of the U. P. R. R., of Omaha, Neb., whose guests we were, Dr. F. N. Conner, president of the Nebraska Dental Association, of Omaha; Mr. A. L. Peckham, of the Creighton Medical College, Omaha; Dr. C. M. Scott, assistant division surgeon of the U. P. R. R., of Payette, Idaho, together with the writer. In addition to the above party, there was an auxiliary attachment, consisting of Arthur Wilson, the "slap jack" expert and all-round cook, of Omaha; Deacon Peter Pence, the "sheep ranch" guide and mayor of Payette; and last, but not least, "Payette Bill" and "Canyon Bob," the teamsters and pack drivers, making in all a party of nine, whose general appearance can be better imagined from the accompanying picture than described.

Each of the five "braves," which constituted the hunting department of our company, were mounted on good, bad or indifferent cayuse ponies, with a full "cowboy" outfit, a Winchester rifle, revolver and hunting knife. In addition to these, some of the "braves" were equipped with fishing tackle and shot guns. The commissary department consisted of one two-horse covered wagon and one covered wagon drawn by a span of mules and two horses, whilst our guide, mounted on a drowsy-looking grey horse, was supposed to be "as brave a man as e'er commission bore," and was expected to lead this blood-thirsty gang of wild and wooly-hunters to "the happy hunting grounds" at the head of the Salmon River in the Bitter Root Mountains of Idaho.

OUR PARTY.

After a three days' ride acrcss the dry, hot, sandy, sunny plateaus with nothing to entertain us but sage brush, rattle snakes, crickets and greese wood, we "sighted timber" for the first time on our trip, and camped for dinner on Round Valley, a beautiful plateau some 5,000 feet above sea-level, and surrounded on all sides by rugged mountains. In the afternoon we passed the Tripod and saw the first "deer sign," and later on we crossed the Payette River, a wild, picturesque mountain stream, and camped in a beautiful grove of fir trees, which covered in profusion this part of the rich and fertile Payette Valley.

At noon, the following day, we camped at the head of Long Valley, in sight of perpetual snow, which covered an isolated mountain peak, which, in the absence of a better name, was christened "Mount Reed," and which was estimated to be over 8,000 feet high.

The tour down Long Valley, one of those numerous plateaus that seems to connect the great mountain chains of that country with each other, was continued until we reached McGuffin's ranch, where we camped for the night; the next morning we made arrangements with that gentleman to leave our wagons and all supplies that were not absolutely necessary with him, while the remainder was packed on "pack" horses and mules, preparatory to ascending the mountains, which could be seen in every direction lifting their lofty heads and piercing the crystaline atmosphere as they towered toward the cloudless skies of that wonderful country. To our left, as we faced the setting Orion, was the Payette River, skirting the foot hills of the snow-capped peaks which ascended, as it were, in great terraces from its sparkling bosom and which separated us from a series of grottoes,

Where water-grass grows o'er the green,
On damp, cool flats, by gentle streams;
Still as a ghost and sad of mien,
With half blue eyes the heron dreams.

Is it any wonder that the brawny sons of toil, who have chosen this far-off country for their homes, are the type of physical strength and endurance? Is it any wonder, as they live in their rude log huts, encircled by a constant, picturesque panorama, wrought by nature's own handicraft, that sickness and disease are almost unknown to them? Is it any wonder the cowboy abhors the city and longs to be galloping over his native plains which bring him in such close touch with nature in all its beauty? Where he can fill his lungs with boundless volumes of aseptic air, and quench his thirst at will from nature's babbling brooks, which, in the language of Tennyson,

Wind about and in and out,
With here a blossom sailing,
And here and there a lusty trout,
And here and there a grayling.

From camp McGuffin, we left our pack train for the rugged mountains, through whose unyielding adamant winds the tortuous channel of the Big Creek Canyon.

It was only three miles across Long Valley to the foot hills of the mountain range we were about to traverse, but to the unaccustomed eye it did not look to be more than half a mile, whilst the mountain peaks, which were fully fifty miles distant, did not appear to be more than ten miles away. Experience, however, had long since taught us not to be allured by the delusions of the "magnificent distances" which are peculiar to these high altitudes and radiant atmosphere, but when an object appeared to be about a mile away, to multiply that by five, at least, and we would get the distance approximately correct for all practical purposes.

As we crossed this plateau immense herds of cattle and horses could be seen in all directions grazing on the rich, but dry and uninviting-looking "bunch grass," which covers these plains in great abundance.

In the higher portions of the foot hills were found many of the old nests of the wild goose and blue heron, which unmolested had reared their young and forsaken their wild-wood nursery of the early spring and summer for the more enchanting mountain lakes and grassy grottoes.

Only after travelling miles up the canyon do we find the last "settlement," where all alone in a wooded lawn that skirted the rich plateau through which wound the refreshing waters of the Big Creek, and hemmed in on all sides by heavy timbered mountains, lived a man and his family who had chosen to turn their backs upon a hustling world, and earn their bread by the sweat of their brows in this secluded spot, unmolested by the giddy whirl of fashion or the wily schemes of trade and commerce. As you ride by this log hut you naturally ask yourself the question, "Why does he live here, away from friends and neighbors, as well as foes?" You see around him fat cattle, flocks of sheep and fine horses. But what does he want with them? How can he find a market for them so many miles away from the centre of civilization? You see wagons, harness, plows and harrows, and you know, to have obtained these he must of necessity have packed them on horse-back across the intervening mountains which are only traversed by a narrow foot trail. Was he a criminal who had taken this means of escape from justice, or had poverty forced him to the uttermost ends of the earth, or had paternal love driven him to these extremes in order that he might the better provide for his wife and family?

Finally we are free. We have left behind us the last "settlement" and now have nothing before us but the irregular and defiant mountains whose only denizen is the wild beast, and whose daily music is the rustling of the leaves, the chattering of the brooks, the roaring of the cataracts, the songs of the wood-bird and the shrill scream of the eagle.

After leaving the treeless plateaus the timber gradually increases in size and value until the scrubby mountain pine is supplanted by the mammoth fir trees whose spirelike crests tower from two to three hundred feet above the adamantine subsoil in which they were firmly rooted; whilst their long, straight, limbless trunks, bedecked with festoons of black and yellow moss, measured from three to four feet in diameter. As we ascended above these to the higher latitudes the gigantic fir trees again gave place to the scrawny scrub pines which recalls to our mind the old adage, "Twice a child and once a man."

Our route is now along narrow mountain passes that wind their serpentine way at times hundreds of feet above the bottom of the canyon, with rocks piled thousands of feet above us; again the trail was so narrow, rocky and steep, as to seem almost impassable. Yet notwithstanding the inconceivable ruggedness of many of these barren peaks we were constantly running across the omnipresent traces of the energetic prospector, who ever and anon is hunting for the precious metals which are supposed to be lurking in safety and seclusion, firmly locked in these great inconceivable granite vaults of nature.

As we pushed onward up the steadily contracting canyon and got nearer to nature and farther away from art, I more than ever appreciated those beautiful lines, written by Mary Clemmer, who said:

Afar within the fainting town,
Where waves of heat come rolling down,
And men sink down to die,
I seem to drink thy wine divine,
I saw thy face, O mountain pine,
And yet could not draw nigh.

I said: "The breath of heaven is sweet,
And balm and peace and silence meet
Upon the lonely hill.
Hush, weary heart, Thou soon wilt find
The even pulse, the rested mind,
In regions cool and still."

Having reached the summit that divides the beautiful Payette Valley from its rival, the Salmon, we soon struck the head waters of the Salmon River and proceeded to descend from our "high perch," and follow this beautiful stream as it wended its tortuous way down the diversified canyon, which at times becomes more tame, and spreads out into elegant lawns, skirting the foot hills of the craggy mountains which towered around them. It was in one of these beautiful gardens of Eden that we camped for the night. It was covered by a profusion of wild flowers and groaning with rich and juicy grasses which crowded close upon the silvery sands that bordered the cool, clear, sparkling mountain stream that seemed to be resting for a moment from the turmoil of the cataracts, as it laughingly played across this inviting plaza. What a delightful place after a long day's ride through a wilderness that would have taken the Israelites four hundred years to have crossed in the days of Pharaoh! But it was worth the crossing to have the privilege of camping in a wild, romantic place like this, and to look into these glassy waters and see the tempting speckled trout anxiously awaiting for the ambitious piscatorial artist to allure him from his stony nooks with the deceptive fly; to gaze upon the setting Orion, who by the magic touch of his diversified rays was painting the shattered peaks of the defiant Rockies with the most pleasing colors, whose blending together by the occult powers of nature beggars even the vivid description of the poet, who said:

The sun in the far west in splendor still shone,
And looked o'er the scene like a prince from his throne;
His mantel of crimson like gold studded o'er,
Hung bright o'er the mountain, the lake and the shore.

Our friend Conner, who is one of those good-hearted, jolly fellows, blessed with a well-set auburn mustache and an insatiable appetite for canned pears, and who weighs something over two hundred pounds and with a muscle that would knock Corbett out in the first round; and Mr. Peckham, a lean, tall, jolly, timid, backward "old bachelor," who like a singed cat was always decidedly better than he appeared, and, in fact, was the "sport" of the crowd—were the fishing experts of the party and were soon found enwrapped in their favorite amusement; but it required no expert to allure these dainty scaleless fish from their secluded haunts in this fascinating mountain stream. Whilst it was not my lot to be born a piscatorial artist, yet I almost envied the enraptured pair when I saw how they enjoyed themselves and thought of the lines written by Maurice Thompson, which say:

Go with me down by the stream,
Haunt of bass and purple bream;

Feel the pleasure, keen and sweet,
When the cool waves lap your feet.

While with delicate touch I feel
The gentle pulses of the reel.

I wonder will he ever stop?
The reel hums like a humming top.

Through graceful curves he sweeps the line,
He sulks, he starts, his colors shine.

Whilst I, all flushed and breathless, tear
Through lady fern and maiden's hair.

And in my straining fingers feel
The throbbing of the rod and reel.

At last he tires, I reel him in,
I see the glint of scale and fin:

The circles' halos round him break,
He leaves gay bubbles in his wake;

I raise the rod, I shorten line,
And safely land him—he is mine.

What a delicious supper! It makes my mouth water yet when I revert to it. Just think of it. Panned mountain trout, fresh slapjacks, beans, coffee and canned pears; and how they disappeared as we knelt on our "marrow bones" around a table consisting of an oil-cloth spread over a bed of wild flowers. There were scarcely enough scraps left to feed the silly pup who, a few days before, had decided to exchange sheep herding for camp life and followed us from day to day, footsore and long since weary of his new avocation.

Soon after sunset the "doleful vigils" of the mountain owl began to produce a hypnotic effect on us, as we sat around the camp fire relating the adventures of the day, and quickly lulled us to sleep after we retired to our humble couches.

The next morning found us bright and early on our way down a tributary of the Salmon River, but we had not gone far before we struck a lot of fallen timber which to the sojourner in these parts is the most annoying obstacle he has to contend with, for every now and then he will find himself hemmed in between the unyielding and precipitous rocks of a narrow canyon, down which at some time a destructive fire, followed by a sweeping cyclone had swept everything before it, leaving the timber piled in every conceivable position and laying in every possible direction, mingled and intermingled in the most dishevelled condition from one to three and four trees in depth. To escape these masses of timber is utterly impossible. You cannot climb the bluffs which surround them because they are too steep. To cut your way through them with an ax would be no small task and would necessitate a great loss of time. Consequently, the usual method is to pick out a trail, no matter how crooked or circumnavigating in its course, along which the timber is not so thick and tangled but what the trained mountain ponies and pack horses can climb over it. It is really amusing to watch these native horses cross a lot of fallen timber, and it is not a little surprising to see how they will climb over huge logs with their burdensome packs, which to the unaccustomed eye seems to be impossible as well as impassable. But they will follow their leader no matter where he goes, or how difficult it is to scramble over the snaggy logs in their pathway. In fact, it is quite difficult to get one of these ponies to deviate one particle from the road selected by the "bell-horse;" although another may appear easier than the former, yet he will follow exactly in the footsteps of his leader, regardless of the difficulties he may have to encounter in doing so.

It was almost sunset when we reached the verge of the Salmon River canyon, which we were now obliged to cross. In descending its steep declivities it put one in mind of attempting to ride down the side of a mansard roof; but it had to be done. Everybody carefully "cinched" his saddle, whilst the teamsters tightened the loads on the pack horses, and one by one we slid, scooted and scrambled down this indescribable, rocky, rough, treacherous trail until we got to the verge of the river, which at this point was a rushing, raging torrent with banks at least four feet above the water's level. The bed of the stream was covered with immense rocks and boulders over which the water was lashed into a milky foam, for the torrent was so swift as to almost carry our horses' feet from under them.

After crossing this stream in safety and ascending the precipitous and crumbling adamantine walls which again led out of the canyon, we lost our way, and whilst skirmishing around over the bluffs to find our latitude and avoid an immense boggy swamp that lay before us, and at the same time to escape another mass of fallen timber, we sighted our first buck, a magnificent fellow, who was crossing the river toward us on the opposite side of the swamp. No sooner had we faced each other than the piscatorial artists and myself, who were the only ones of our party who saw him, dismounted, and in less time than it takes me to tell it one after another "our rifles rang throughout the neighboring wood." With each crack of the rifle he fell, but as promptly demurred against "staying fell," but sprang to his feet, and, to our disgust, was soon lost in the thick underbrush, through which it was impossible to follow him, for between him and us was not only an impassable swamp, but the river we had just crossed and he had recrossed.

The sun was now behind the mountains, and as we had not yet located our course, no time was to be lost in finding a camping place for the night. The repeated and rapid firing soon attracted the attention of our partners, Drs. Galbraith and Scott, who had taken a scout to the right and left in search of a trail, and who now "came to our rescue." After returning to the "pack train," which had been "rounded up" on the bluff above us, we soon succeeded in finding a beautiful camping ground on the banks of the Salmon River, which was surrounded by a fertile plateau covered with an abundance of rich bunch grass for our tired, hungry horses. After christening this delightful oasis "Camp Salmon," and faring sumptuously on a supper of "hard tack and sow belly," we retired for the night. We had scarcely gotten into bed, however, until we were aroused by a terrible roaring, mingled with growling and snarling, which seemed to be within a few yards of our camp and which proved to be a "scrap" between two grizzlies over a piece of venison. The darkness of the night and the thickness of the underbrush prevented us from interfering with their "family quarrel," and consequently they were allowed to settle their dispute without being disturbed. On examination the next morning we found their tracks within 100 yards of our camp, at which point they must have decided in favor of a reciprocity policy and concluded, as we had in regard to them, not to disturb us, and crossed the river to a tangled thicket on the opposite side.

What a magnificent heart stimulant such an experience is. There was not a man in our party who needed digitalis or nitrite of amyl to get up a good circulation, or one of us who complained of cold feet or a clammy skin. In fact, this sudden opening of hostilities acted as a splendid nerve tonic, which not only increased the circulation but added vigor to the respiratory centres as well. It was some time before we got quieted down again, not that we were *afraid* at all, but the increased circulation had a tendency to produce insomnia which had to be gradually overcome before we could enjoy the embraces of the arms of Morpheus.

The next morning was a clear, bracing, frosty morning, such as you find in these latitudes in the latter part of August, and, after a sumptuous repast, we each supplied ourselves with a box of sardines and a cake of chocolate for dinner, and after seeing to it that our guns were in good order and our cartridge-belts well filled, we divided up our party for a day's "bear hunt." Drs. Conner and Scott with Mr. Peckham took up the canyon which led to the south, whilst Dr. Galbraith and myself took to the north. It was not long before my partner and I struck the trail of two bears who were evidently travelling together. That one of them was almost full-grown was evident by the size of his tracks which measured from fourteen to fifteen inches in length. It is the habit of these animals to go either straight up a mountain or directly down it instead of circling around it, and in following their tracks we were obliged to go through underbrush, which at times was almost impassable, and which, combined with the precipitous sides of the mountains, made the ascent on horseback absolutely impossible and not a little difficult for those who undertook it on foot. Nevertheless, we determined to follow them until we reached the summit some 5,000 feet above our camp unless we halted the shaggy monsters before doing so. This we did not succeed in doing, however, and by noon we found ourselves on the top of the mountain which gave us a charming view of the broken country which spread for miles and miles around us in every direction. From this point the bears had changed their course and descended the mountain at right angles with the trail they had taken in their ascent to a large valley that commenced at the foot of the mountain some three miles up the Salmon River.

After eating our lunch of sardines and chocolate at an elevation of some 10,000 or 11,000 feet above sea level, we continued to follow the trail down the mountain which was so steep that if a rock of any size was jarred out of its nest and started to roll it did not stop until it reached the bottom of the canyon often several thousand feet below. After reaching "pied mont" their trail wound here and there through the thick, tangled underbrush and high grasses until we reached their nest, under a clump of sumac, which consisted in a large quantity of grass and dry leaves, where they had evidently been resting from their night's escapade until aroused by our abrupt approach, for the nest was still warm and showed unquestionable evidence of recent use.

Before discovering their lair, however, we found where they had devoured the buck which we shot the night before which had no doubt satisfied their hunger and the better prepared them for a quiet sleep in their secluded home.

Stimulated by the anxiety of overtaking these monsters of the forest, which we felt sure were not more than half a mile ahead of us, we hurried on, although with the greatest care, especially while going through these tangled thickets, where we were liable to run on them at any minute. We crossed and recrossed the treacherous river after them until they finally forded it not more than 300 yards above our camp and started southward up the canyon, which we afterward found led to a lake some five miles above.

It was now near sundown, and tired out by the day's tramp we returned to camp, after which Drs. Galbraith and Connor continued the chase on horseback, but were soon obliged to give it up on account of the approaching darkness. The other division of our party, although deprived of the privilege of trailing a bear spoor through the mountains, succeeded in bagging some fine venison which added a very great delicacy to our bill of fare for supper that evening.

If any one imagines such sport is not invigorating, let him try it and he will soon be convinced to the contrary. It matters little whether you succeed in bagging game or not, you are amply repaid by the exercise and the expansive influence the rarified air has upon the lungs, whilst the climbing of the mountains has a wonderful effect in developing the muscular department of the legs; all of which must be experienced before it can be fully appreciated. The party who is not accustomed to these high latitudes and who undertakes to chase around through the bush over the mountains, will at first find himself like the Irishman, "with more wind than he needs." But by care and practice he will soon become accustomed to it, and find his lungs accommodating themselves to their rarified surroundings.

With a party who is seeking health it is not so much a question of *securing* game as it is of *hunting* it, for it could easily be caught by using hounds to run it down; but in Idaho to use dogs is considered cowardly, and is justly prohibited by common consent if not by statute law. It is only the *lazy* hunter who will allow a pack of hounds to trail the game over the mountains while he lies in ambush and waits "with slavish fear their coming in the way."

We had only been at Camp Salmon a short time before Dr. Scott discovered a beautiful lake some five miles above us, and which was found to be the source of one branch of the Salmon River. Some time after discovering this lake we decided to "break camp" and if possible get our pack train across the wild, rough country that lay between us and the lake. To do this, however, was no small task, but after some considerable ingenuity and hard work it was accomplished, and we struck camp on an elegant, fir-covered plaza that overlooked one of the prettiest mountain lakes the eye could wish to gaze upon. A clear, sparkling mountain rill bordered on one side of our camp, and on the other side the waters from the outlet of the lake dashed down a rocky chasm. Back of us was what we christened "Lookout Mountain," for the reason that from its barren top we could scan this picturesque country in every direction for miles around. Between us and the lake was a rich, grassy meadow that extended nearly around the lake, which was about five miles in circumference. Beyond this were the placid waters of Lake Echo, which lay like a mirror, framed in the adamantine rocks of the Bitter Root Mountains, and draped with the hemlock, the quaking asp and the fir tree. What a glorious place for those who love the picturesque of Nature, for all around us she seemed to say:

Deep, deep within my solitudes,
The soul of peace and soothing broods,
Half silent, all with life astir;
The morning murmur of the fir.
At dawn's high calm above the hill;
The thread-like ripple of the rill,
Lapsing through mosses fringing cool,
The stillness of the lilied pool,
The calmness of the mountain crown,
Poising a star, the night drops down,
. . . Far away from men and mart
Still years their mighty mother's heart;
She sends thee me thy heart to move,
Fresh token of her changeless love;
She say'st, "Come back, O life-worn child!
Drink from my springs the undefiled!"

Again, how enchanting it was to sit on the moss-girded rocks that here and there lined the banks of these interesting freaks of nature, and there screened by the dark boughs of the hemlock, watch the stag as

He came with his herd, undisturbed, from the brake,
And gazed at his image thrown back from the lake;
Whilst eagle sailed o'er him and screamed in his flight,
Then paused in mid heaven, the emblem of might,
Now kissed with his dark wing the crest of the wave,
Then vanished afar in the new light to lave.

These were scenes that would have rivaled the ability of the most expert painter and skilled artist to have produced. Such panoramic scenes must always be seen to be appreciated.

Nor was the feast of fat things for the eye all its charms. There was music for the ear as well, for we soon discovered that the firing of a gun in our camp was followed by a score of perfect echoes chasing each other in quick succession; for this reason we named this enchanting spot "Lake Echo." No wonder our friend, Galbraith, described his stay there as "the happiest day of his life," for well I remember one somber afternoon as we lay resting from a deer hunt, over Lookout Mountain, under a clump of fir trees, at the mouth of a wild canyon which opened into this mystic valley, whilst before us flowed one of the sparkling feeders of Lake Echo, how vividly the scene recalled to our mind the words of Maurice Thompson, who said:

> 'The soft-tongued waters murmured low,
> Swinging the flag-leaves to and fro.
> Beyond the river, fold on fold,
> The hills gleamed through a film of gold;
> The feathery osiers waved and shone
> Like silver thread in tangles blown.
> The lilied pool, alert and calm,
> Great bass through lucent circles swam.
> And farther, by a rushy brink,
> A shadowy fawn stole down to drink,
> Where tall, thin birds, unbalanced stood
> In sandy shallows of the flood,
> As we lay still, with half-closed eyes,
> Lapped in a dream of Paradise.

But the time came to leave this "distant eden" and turn our backs on the grateful beauties of nature which had, not only charmed us, but filled our physical frames with renewed life and vigor; and as I sat between the branching roots of a monster fir tree, the following expressive lines of the poet flashed through my mind as I reluctantly thought of having to bid farewell to these enchanting scenes; and remembered that I once imagined

> That I could never turn and flee,
> Or even find that quiet spot
> Where greed and gain and noise are not.
> But here I wait till sunset dyes
> Steal through the azure of the skies,
> And soaring hill and circling plain
> Flush radiant with the rosy stain.
> Yonder, between two mountains vast,
> The bright shield of the lake is cast.
>
> O splendor of the far deep sky,
> Of mountain soaring lone and high,
> Of lake that flashes at its feet,
> Of ferns and mosses, cool and sweet;
> O beauty brooding everywhere,
> The essence of the earth and air,
> The ringing brook, the pool's still well,
> The sunlit slope, the shaded dell,—
> How can I say to you, Farewell?

It is said that it is only one step from the sublime to the ridiculous. And whilst the sublime often fills us with awe as well as admiration and thus acts as an excitant to the nervous system, yet the ridiculous will frequently add vigor and activity to the physical frame. After leaving Lake Echo and all its beautiful surroundings, we were plodding our way across one of those valleys covered with fallen timbers, to escape which at the earliest moment we changed on our course and took through a swampy plateau covered with old stumps, rotten logs, and so thickly set with dead saplings that it was almost impossible for our pack-horses to find their way through them. All of a sudden Dr. Galbraith and the writer, who were in the lead, were attracted by a war-whoop from the rear, and looked around just in time to see our cook, who was perched on the pack of his favorite mule "Becky," which was at this juncture vigorously kicking and rearing with remarkable agility, which oscillatory motion was giving the cook some new physical exercise, for each time the mule changed from a rear to a kick the cook was bounced from two to four feet in the air. This unexpected change in the transit came on so suddenly that it was not until a dozen or more yellow jackets had found their way up his trowser legs that the cook fully appreciated the cause of the excitement, when he vigorously renewed his efforts to maintain his equilibrium on the top of the pack without being advised by anyone. He seemed to fully appreciate the fact that enough yellow jackets would find him up there without being dropped into the nest. The contagion spread more rapidly than cholera, and soon "Canyon Bob" and "Payette Bill" were taking a vigorous part in the exercises, which were joined later to a certain extent by the entire party. The diligence and persistence of these macroscopic microbes soon got up a stampede among the pack-horses, who took through the dead saplings like a load of buckshot, knocking them down in every direction, some falling on the horses, some on the mules and others barely missing the drivers, who were more interested in looking after the "business ends" of the yellow jackets, who were playing the part of an active counter-irritant on themselves, than they were in what the horses were doing.

This wholesale and retail "bucking and "stampeding" was finally controlled, after no small amount of profanity and yelling on the part of the drivers, without any serious injury, and not a little amusement to those of us who were not so actively engaged in the entertainment; and I can assure you it had a most decided effect in working up a grand circulation, especially in those who were actively engaged in the exercise. It added variety to our hunt, and for the time being was as exciting as a bear chase and much less dangerous and served as a little spice to enliven our trip.

Before returning home we crossed Long Valley, visited the beautiful Payette Lakes with their pebbly shores and crystalline waters that stretched out like mirrors toward the famous Seven Devil Mountains. We camped beside the Thousand Springs which is not only a spouty place at the foot of a chain of mountains, but a great resort for the famous Idaho cricket. This insect is not so famous a songster as his eastern relative of the "old chimney corner" but gains his notoriety from his size. He is over two inches in length and of a jet black color and is found around these springs by the million.

At sunset they go to roost on the sage bush like so many chickens on an apple tree, and remain there until sunrise, unless disturbed; in fact, I have seen every limb of a sage bush literally filled with these enormous crickets who seem to be the principal inhabitant of this part of the country. They are very large and strong, and in appearance, when compared with the eastern cricket, look like a fat Berkshire pig beside a half-starved jack-rabbit. They are regular cannibals, for the moment one of their comrades is injured the least bit, they jump on him without mercy and eat him alive. To distinguished (?) visitors like ourselves they were inclined to be very neighborly, and were quite willing to share our beds with us and would make themselves very much at home tramping around over us during the night, which was much more to their enjoyment than to ours. In fact, I never did take kindly to being tramped on, much less by a briar-legged cricket. Dr. Connor, however, was much more "old maidish" on this subject than myself. I remember one night I was awakened by him "carrying on" at a desperate rate. I first thought he had an attack of "nightmare" and then I thought he was having "puerperal convulsions," but finally discovered that he was only having a wrestle with a contrary Idaho cricket which persisted in "crawling his frame" contrary to his wishes, which had resulted in a general "fall out" and "bad feelings" all around.

From here we wound our way through the mountains and valleys until we reached Weiser, on the Union Pacific Railroad some fourteen miles west of Payette, our initial city, after having made a complete circuit of over four hundred miles.

Our host, Dr. Galbraith, however, was not satisfied with the entertainment he had already given us, but insisted on taking the entire party to the Pacific Coast, as *he* said, "to get us civilized again before he returned us to our homes." And before he was satisfied that our recivilization was complete he took us over the picturesque lines of the Union Pacific Railroad to Spokane Falls, thence to Portland on the Willamette, Tacoma and Seattle on Puget Sound; then down the Columbia River, the great rival of the Hudson, to Astoria, and from there on "The State of California," one of the great iron-clad steamers of the Union Pacific Company that plies between Portland and San Francisco, to the latter city of Golden Gate fame. From there through the courtesy of General Manager Towen of the Southern Pacific Railroad we were taken to Los Angeles and thence to Redondo, where we were luxuriously entertained by Dr. Ainsworth, Surgeon of the Southern Pacific Railroad.

At Los Angeles we were met by Senator Carpenter who escorted us to Sacramento and there entertained us with the State Fair and a great fruit and machinery exhibit, which of itself was well worth the entire trip. Thence we returned homeward by way of the Central Pacific Railroad to Ogden, the great metropolis of Utah.

But our "swing around the circle" would not have been complete without visiting Salt Lake City, the Jerusalem of Mormonism, and its great inland sea; and after bathing in the briny waters of the latter, and being thoroughly lectured by our host on civilization ethics and warned to discard our savage customs "immediately and to once," we boarded the Union Pacific "overland flyer" and soon found ourselves in Omaha, the great metropolis of Nebraska.

In this paper we have only given you a sketch here and there of our adventures and experience "Hunting Health and Bears" in the Bitter Root Mountains of Idaho, and yet we feel that we have already taken up more space and time than the merits of the paper warrant, but certainly enough to illustrate a few of the hygienic advantages to be derived by those who will break away from business cares and spend a few weeks each year in the rugged mountains of the West, which, although less popular, offer infinitely better facilities, and a greater variety of amusement and exercise for the worn-out business man than the more popular voyage across the ocean to crowded Europe. But some one says, "How can I spare the *time* to leave my business to enjoy such healthful recreation?" Why, my dear sir, if you do not, you will soon have to take *time to die;* but he who will spend a few weeks of each year as we have done will soon demonstrate by actual experience that, "a stitch in *time* saves nine," and in so doing he will postpone the *time* when the "silver cord will be loosened" and "the golden bowl broken."

MANSFIELD, OHIO, November 7, 1892.

Your Home.

You are contemplating the erection of a house in which you intend to live with your family as a future home, and so far as your means will permit, you are naturally desirous of making this house a perfect home. In this home nest that you have decided to build, there will be gay gatherings of happy people; there will be quiet, peaceful hours to be spent in rest and recreation; there will be work to do; there will be weddings, births, sick ones to be nursed, deaths, funerals. The sad side of life cannot be cancelled by the architect, the artist, or the builder. But these, intelligently exercising their skill may do much toward lessening the unavoidable ills of life. They can plan, and build, and decorate in accordance with known sanitary principles.

Health, above all things else, ought to be the first and paramount consideration in the construction of this house you propose to build. To this object all other desires should be subordinated. Of course the site selected must be salubrious, but even upon a perfectly healthful spot of land it is easy to rear a manufactory of disease. There are many—far too many—such houses to be found. The doctor's bills paid in this country by reason of unsanitary plumbing, unsanitary heating, bad ventilation, and lack of ventilation, probably would aggregate a sum ample to cover the first cost of sanitary construction, to say nothing of the pain and suffering endured by both sick and well that such con struction would save.—*Engineering Magazine.*

Suburban Life a Factor in Material Progress.

BY JOSEPH F. EDWARDS, A.M., M.D.

APPEALING, as I am doing, rather to the eye than the ear, I would make my explanation of the two drawings that really constitute this article as short as possible, and I would commence this explanation with the assertion that "suburban life is a great aid to material progress." Every thoughtful person already knows that suburban life is conducive to individual health; but, possibly, this thought has not been followed out to its logical conclusion. The individual is a unit in the community, and the aggregation of these units makes the community. The condition of these individual units will determine the condition of the community. If these individuals are vigorous and healthy, the community will be vigorous and healthy, and it is certain that a vigorous and healthy community, only, can attain material prosperity. If suburban life means health to the individual; universal suburban life would mean health to the aggregation of individuals that constitute the community, and, therefore, to the community itself.

There seems to me something very much in accord with nature in suburban life. If we take the city of Philadelphia, for illustrative purposes, we might liken it to the human body; let us take all the people away from the city; we would have the streets, and the buildings, and the electric wires just as we have the organs and the blood-vessels and the nerves in a dead human body. Keep these people away from the city for a time, and the city would fall into decay, just as would the body, if deprived of blood and oxygen. Let us imagine a completed city, so far as streets and buildings and wires are concerned, and let us drop into this city a lot of people, and at once, the city is alive, so to speak; the electric light shines, the stores open, factory whistles blow, and the thousand and one things that, in the aggregate, constitute the vitality of a community become manifest. To one who views the city at two o'clock in the morning, it is as a dead body; the parts of the city are all there, but no life is evident; it is the living, moving, acting individuals that give life to the city of wood and stone; so to the city of flesh and bone (the human body), it is the aggregate labor of the ever-circulating individual blood corpuscles that gives it life, activity, vitality.

To my non-professional readers, I would say that without the circulation of the blood there could no more be life in the human body than could there be life in the city without the circulation therein of an aggregation of individuals, and my fancy leads me to liken the individual man, in his relation to the vitality of the city, to the individual blood corpuscle in its relation to the life of the human body.

This little corpuscle (only $\frac{1}{3200}$ of an inch in diameter) is, relatively to the human body, as large as is the man when compared to the city that he inhabits. Through the blood-vessels of the body continually journey these little corpuscles, carrying life to all the parts thereof; through the vessels or streets of the city continually travel these individual human beings, carrying vitality to all the parts thereof.

Now, physiology tells us, that when these corpuscles have made the circuit of the body, they are worn out, and before they are ready for more work they must be carried to the lungs to be aerated, to be invigorated, to be rejuvenated by the life-giving oxygen of the atmosphere. So the individual, after his day of labor, is worn out, and he must be refreshed ere he is able to continue his work.

When I stand in front of the Broad Street Station of a fresh, cool, fall morning, and see the rosy-cheeked, vigorous, healthy-looking men and women, fresh from the country, being pumped, so to speak, from the station into Broad Street, then branching and branching and branching into the different streets of the city, carrying the vitality of the country into even the most remote corners thereof, I am forcibly reminded of the function of the human heart; and when, at evening time, these self-same individuals, tired and jaded with their day's work, are sucked into the station and again pumped out into the country to be re-invigorated, aerated, oxygenated, as it were, I am even more forcibly reminded of my morning's fancy.

The blood, pure and fresh from the lungs, is pumped, by the heart, all over the body as a vitalizer; received back into the heart, impure, it is pumped into the lungs to be purified; back again it travels from the lungs to the heart once more pure and fresh, ready to carry vitality to the body.

The aggregation of individuals, pure and fresh from the country, is pumped from the Broad Street Station all over the city as a vitalizer; received back into the station, impure, it is pumped into the country to be purified; back again it travels, from the country to the station, once more pure and fresh, ready to carry vitality to the city.

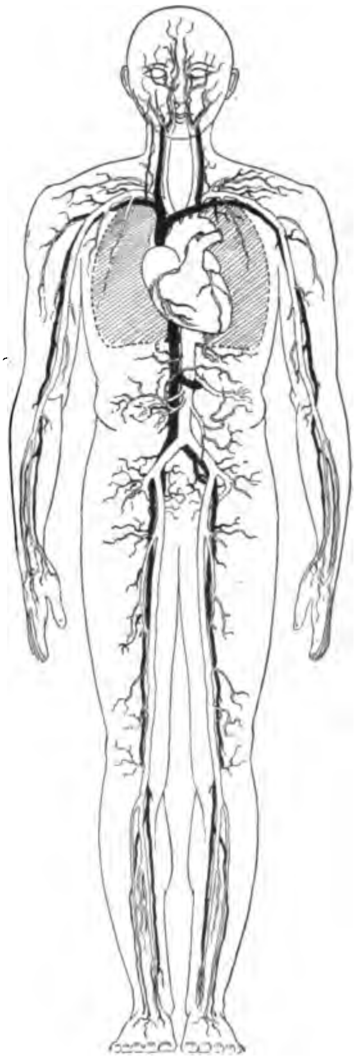

DIAGRAM OF THE CIRCULATION.

The white lines are the arteries, the black lines are the veins, the lungs surround the heart.

Is there not something in the analogy?

Again, if when the blood is pumped into the lungs it meets there an impure atmosphere, deficient in oxygen, it must be evident that when it starts again on

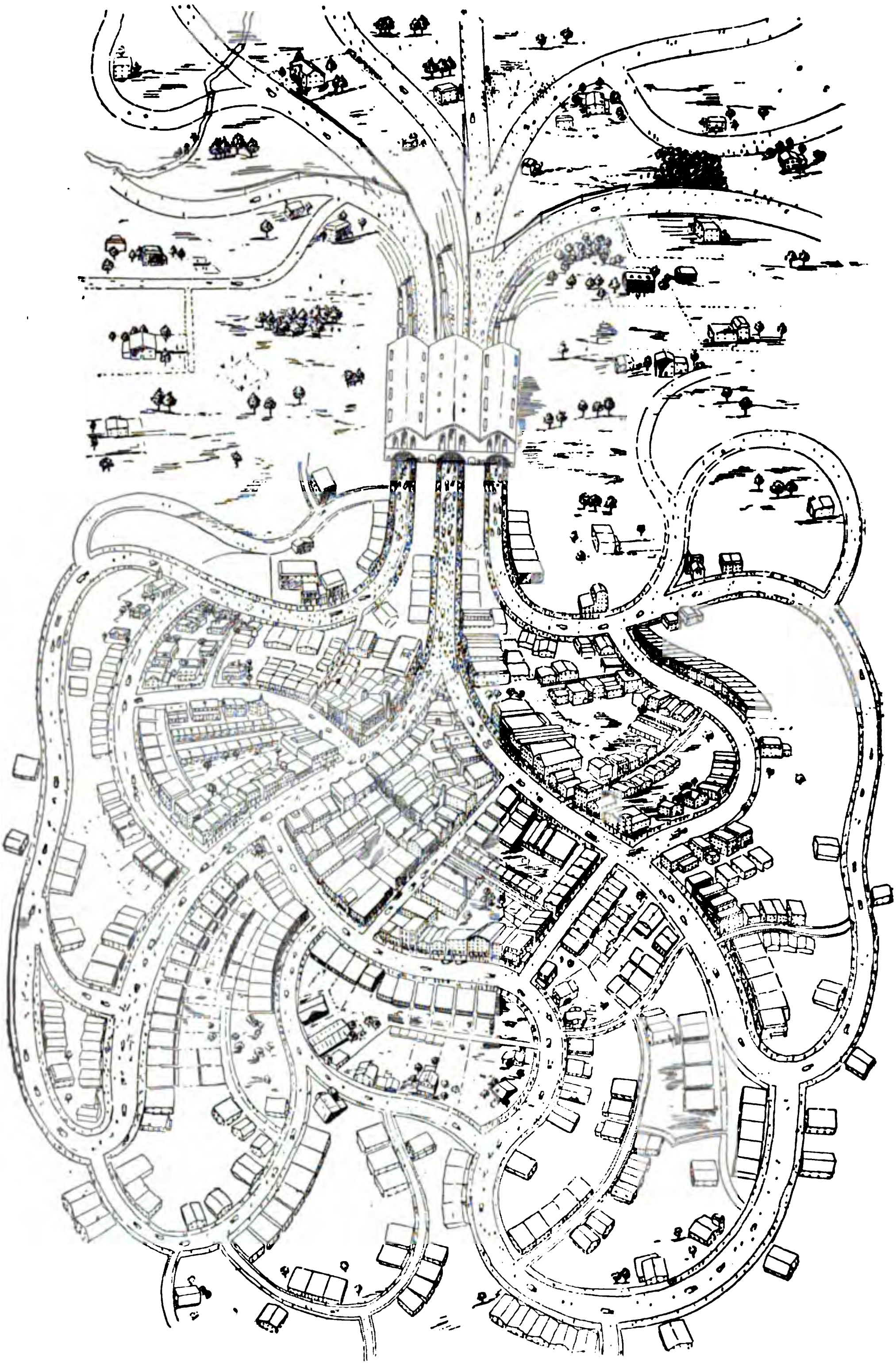

Diagram of the Municipal Circulation.

its journey of vitality it will not be as vigorous, healthy blood as it would have been had it been subjected to a purer atmosphere in the lungs.

Is it too much to claim that the individual who, after an exhausting day's work, seeks his recuperation in the more or less impure atmosphere of a city, will not be as healthy and vigorous in the morning as he who rushes off to the pure, life-giving atmosphere of the country. As the blood corpuscle must be thoroughly oxygenated in the lungs, so the city corpuscle (the individual man, woman or child), must be well oxygenated in the pure air of the country, else, the human body, in the first instance, and the body politic, the community, the city, in the second instance, will not achieve the greatest measure of development; of material prosperity, of which each is capable. I feel that from what I have said you will grasp my idea, an idea that may be briefly stated as follows: In order that a city may reach its highest possible material development, it will be well for the workers to do their work in the city and to do their breathing, their sleeping, their recuperating, their re-invigorating in the open country adjacent to the city. In other words, "urban work and suburban play," will make not only the best men, but the best city.

"Typical" Man:
On the Abuse of the Word by Physical Educators' and What it Should Mean.

BY A. H. P. LEUF, M.D.,
Philadelphia.

WHAT is the typical man? Who has the right to say? How shall he be determined? In what manner is he to be gauged? These are relevant questions of important significance because of the frequent use of the word "typical" as applied to man by a rising class of writers styled physical educators. Especially is this so since the formation several years ago of the American Association for the advancement of Physical Education, which meets annually. and before which papers are read and discussed with this word used by its most prominent members. Their construction of the word with the tacit sanction of the association gives it an official quality apt to make it customary, and thus eventually lead to confusion of thought if wrongly used, and that it is wrongly used is to me very evident. Hence this note upon the subject to correct the error.

Is there a typical man, and can there be one in the sense in which the term is being used? A typical man is one who is a type. A type of what? In physical education circles it means a physical type of physical man. But men vary in physique to an extraordinary degree. Occupations, for instance, are so varied that a good and proper physique for one thing and one climate would be defective under changed conditions. Physical educators have for some years been confounding what they call the "typical" man with their supposed average of a number of measurements of a class of individuals differing widely in various ways, but these are two totally different things, and to them may be added a third—the ideal man.

Prominent among those who wrongly use the word "typical" is Dr. D. A. Sargent, of Harvard University. On his anthropometrical table, which is divided into percentage lines, as is customary, he has the fifty per cent. line prominent by having it extra heavy. This he calls "the normal or typical line; *i. e.*, the line that was represented at each part by a larger per cent. of the persons examined than was any other line at any other part." This very phraseology makes it an average line instead of a typical line. But it is not even an average line. It is self-evident that the fifty per cent. line is the middle line of the chart, or the average line *of the chart*, but it is not an index of the average measurements and strength tests that have been made. Inasmuch as there are a larger proportion nearer the one per cent. line than near the one hundred per cent. line, the average line must be lower than the fifty per cent. line. The greater the discrepancy between the ages the more is this so.

Another error consists in expressing the average on a *straight* line. This could only be correct if all measurements fell on straight lines, or, if irregular, that they complemented each other. Now, the fact is that no individual's total measurements are ever likely to fall on a straight line in a series of forty-three measurements plotted on a percentage chart based upon say only one thousand measurements. In the simplest ratio under the circumstances it would not happen more than once in 43,000 measurements, but the ratio is a compound one and reaches, when properly computed, an immensely greater divergence. No straight line can be an average line in these charts. It must ever be an irregular line because all test lines are irregular without being complementary. But Dr. Sargent makes the common error of supposing the contrary, and has even gone so far as to offer cash prizes of $500 for "perfect symmetry," to be established by all measurements falling on one line. It is self-evident that the mere fact of all measurements falling on one line would be *prima facia* evidence of asymmetry; but according to the conditions of the award, a person so asymmetrical as to have all measurements fall on one line, will get a $500 cash prize for "perfect symmetry."

It is impossible for all the measurements of a perfectly symmetrical individual to fall on the same percentage line of a chart when plotted from a number of asymmetrical measurements. In my own chart, based upon over one thousand measurements, the only bilateral measurements that are alike on the fifty per cent. line are those for the knee. A symmetrical individual's measurements would necessarily frequently cross from one side to another a given percentage line. Any individual whose measurements would all fall on any one of the lines of my chart could not be symmetrical. The same is true of Dr. Jay W. Seaver's chart. Dr. E. W. Hitchcock's chart, based upon age, shows the same asymmetry of straight lines. So also his tables, based upon 15,000 measurements and published in the proceedings of the American Association for the Advancement of Physical Education, for 1890.

Artists have a typical man in the Apollo Belvidere, but it is only typical of a sense of the beautiful in the proportions of a man—sentiment or æsthetics. This type is largely based upon a favorable consensus of impressions of the æsthetically educated. It is based upon sentiment and usage rather than upon science *per se*. It is pleasing to the æsthetically educated eye, to the poetic eye. A figure that has an harmonious outline is so far beautiful. If it is true to anatomical facts so much the better, because it bears investigation. The female figure, with its characteristic inter-muscular deposits of fat, has a more gracefully rounded form than has man. Its lines of beauty, as the artists call them, are more graceful, more perfect, and blend in greater harmony. The male outline is not so graceful because of the muscular prominence and adjacent depressions, but even these abrupter lines may harmonize. This gives an artistically good male figure less of delicate beauty or harmony, but the pleasing and vigorous feature of evident strength has a complimentary charm. Human female beauty is suggestive of repose, while that of man bespeaks potential energy in abundance and in proportion. One is languid, the other energetic. But these are artistic ideals of sexual and other types. Who could mistake the Apollo for a naked professional mendicant?

I would define the characteristic of type as a combination of qualities or attributes peculiar to the class represented by the type. Thus the typical cowboy must be a good rider, and be an expert in the long whip or lash, the lasso, and the revolver and rifle, besides having other necessary qualities. He must have the bad qualities characteristic of the class as well as the good. Types are sometimes abominations. For instance, no cannibal who did not eat human beings could lay claim to being a typical cannibal, though he might serve as a partial type, for example, as to other qualities. Type is pre-eminently representative of a class.

A cowboy, on the other hand, having all admirable attributes and no bad ones would be a very pleasant individual, by contrast anyway, but he would never do as a type of the cowboy as we understand him. He would, however, make a good ideal. But this is another thing. Were we now to note all the traits of thousands of cowboys and average them, the average would be neither typical of the class nor would it give us the ideal. A man who would about fill this general average could neither be a first-class cowboy nor an ideal one.

Let me illustrate again; say that men at college had to make a record in all the athletic events. I mean the good, the bad, and the indifferent. The average of all these would be a given amount. I will now suppose an individual who would in all particulars just equal this average. It would not be logical to stamp him as a type of the college athlete. He would be worthless in all competitions, for he could come no where near the upper men of the class of which he stood as the type. He could not win even a third prize. Imagine him now as a typical athlete. It is an error of the most absurd kind. No more would he be the ideal athlete. He would simply represent the average athletic ability of the college men examined at the time of examination. No more—

no less. Imagine an artist's ideal of human beauty depending upon the average of thousands of measurements of all who came along regardless of various conditions.

Types may be viewed as morphological or functional. I have considered them mainly in common. In functional types environment plays a much more important part than in the purely morphological. In other words, environment induces appreciable morphological changes slowly but functional changes quite rapidly. The physical educator's "typical" man is morphological so far as his measurements are concerned, and functional as regards his tests of strength and sensorium.

Dr. Sargeant's fifty per cent. line "typical" man is therefore only an asymmetrical man built upon an arbitrary straight line in the middle of a percentage chart with some of his parts below and some above the average.

Types may be those of genus, they may be racial, national, urban or rural, or may be classed by age, sex or occupation.

Zoölogically, typical man is the type of the genus homo of the order of primates, both morphologically and functionally. He is typical only in so far as he contains within himself those qualities possessed by all men and that are not possessed by the highest varieties of anthropoid apes. Among these may be enumerated the erect posture and purely pedal locomotion without the use of the hands; the change in the centre of height of the body from the umbilicus to the symphysis pubis during youth; the marked opposibility of the thumb; the length of the instep and the heel, together with the expansion of the latter; the relative fixidity of the great toe; the lessened pilosity; the innumerable differences in the vertebral column, so largely due to the erect posture; the marked differences in the skull, including especially the relative proportions of the cranial and facial portions; and the many muscular and other differentiations.

Racially, types vary, but attention may be called to Blumenbach's classification of man into his five divisions of Caucasian, Mongolian, Ethiopian, American and Malayan. To whom, for instance, does not at once occur the short curly black hair and skin, thick lips and broad flat nose of the Ethiopian; the yellow skin and oblique palpebral slit of the Mongolian; the copper color and straight black hair of the native Indian?

National types are well known. Who cannot recognize by personal appearance the inhabitants of the various countries of Europe, for instance, the English, Irish, Scotch, German, French or Italian? Can any one mistake the typical Jew when once seen?

The difference between the urban and rural types are so marked that country children recognize the "city chap" at a glance, and a city boot-black can pick a country farmer out of a crowd of city folk.

Then there are the various types of different ages, as infancy, childhood, youth, maturity, middle age, decline and senility.

So there may also be added the difference in the sexes, both morphological and functional.

Last of all, and most important of all to the physical educator, are the types of various occupations. Note the necessary differences that exist between the blacksmith and the tailor. Each must necessarily differ from the other because they cannot at once change places without mutual discomfort and perhaps damage. Members of some occupations have such a characteristic appearance because of their work that they are recognizable at a glance. That which thus distinguishes them constitutes type.

In this so-called practical age, the ideal man must be pre-eminently utilitarian functionally, and beautiful morphologically. He must combine in a perfectly proportioned body strong muscles, a receptive and retentive mind, with quick reflexes, and high degree of co-ordination, with all functions being normally exercised and all the so-called vegetative processes of the body taking an undisturbed, perfect course. He is a figment of imagination, though some seem to come reasonably near the ideal. The only possible type of man—I mean the genus now—is the zoölogical one. Special or differentiated types exist in abundance, as I have shown.

The physical educator has to do with the physique of individuals and their relation to their environments. He must study the relation of physique to environment. If he discovers a type he has made a beginning and only a beginning. He must determine how far this type is suitable to the environment, and must seek to learn the higher derivations from the type that are more favorable to environment. This done, he differentiates his types into degrees and begins to build up an ideal man for that environment, and seeks to gradually raise the type to that level.

In this regard Dr. Sargent has done efficient work toward discovering special types. For instance, he has formulated to a limited extent types of athletes and may by this time have begun to speculate upon ideals. Unfortunately, neither he nor any other investigator in this field has yet published enough data to justify a reasonable estimate of a true type.

2342 NORTH SEVENTEENTH STREET.

Secrets of Health.

BY W. THORNTON PARKER, M.D., M.M.S.S.,
Of Beverly, Mass.

LONG before Sir Philip Sidney wrote as a rule for good health, the little verse which so many are familiar with:

Great temperance,
Open air,
Easy Labor,
Little care.

The wise men of earth had given us many rules. We are all seeking after health, more or less, although some affect to be indifferent, and it is just as true to-day as when it was written long ago:

Whatever crazy sorrow saith,
No soul has truly longed for death.

Many years ago, so the story goes, there lived a famous physician. His sons, greatly impressed by the wisdom and sturdy good health of their venerable parent, sought from him the precious secret, but all in vain, he declared he could not tell them any more, than by precept and example he had so often endeavored to instruct them, but, finally, obliged by their persistency, he promised that after his death they would find in his desk a book, and in the book would be found the great secret of health. At last, in the course of time, death called and led away the old man. The sons, when they opened the desk, found the book; it was not a large one; but on one page only was there any writing. Astonished at the result of their search, they read but one sentence, "Keep the head cool, the feet warm and the bowels open;" this was the old man's secret of health. Can we improve very much upon that to-day? We must keep a good lookout for plenty of fresh air, wholesome food, reasonable exercise for mind and body, a religious fear of God and a contented cheerful disposition. These will bring about what the old father declared to be the secret of health; but he neglected to state how they were to be acquired. "If thou wouldst make thy son rich," says Herbert, "fill his mind with *rest* before his purse with riches, for wealth without contentment climbs a hill to feel those tempests which sweep over *ditches*." To teach ambition reason, to curb over-anxiety for prominence, to inculcate love of one's own country, to frown down on that miserable condition, known as, "Cosmopolitan." Teach love of home and love of fireside; encourage manly love of religion, and help on every ambition to marry early and settle down. Discourage the "flat" and the boarding-house; teach ever "Domum, Domum, dulce Domum." The wife of a man's youth, the home where children are growing up, to fill with the sweet comfort of affection, the declining years of the parents. These, too, are secrets of health. Married life is blest even before His presence, Who blessed all things good at the happy marriage of Cana.

I remember once hearing a priest say to a couple he had just joined together in holy wedlock before the altar: "My children, you have indeed a blessed privilege, for to you is given to people paradise." What a noble thought; what manly purity of instruction! I have often wished I could know the history of those young people who started out so happily.

Many years ago an odd old man, something like the eccentric doctor we have just referred to, left, at his death, a number of sealed packets to his friends, and, on opening them, found a Bible, £50 in notes, and a box of pills, and the words, "Fear God and keep your bowels open."

It is said of Englishmen, if they be ill, the trouble is all in the *stomach;* if an Irishman, it is in his *heart*, and if a Scotchman, it is in his *heed*. Shall we say of our own countryman the trouble is in his *bowels?* Perhaps we may not speak so surely, but I believe we would not be very far from the facts in the case.

Our climate, our hurried lives, our worry, our political uncertainties, these, and a hundred ills, which make our existence mere toil with suitable pleasures, combine to make indigestion and intestinal disorders far too common.

The healthiest Americans are, I believe, those whose lives in the cities bring them in contact with foreign methods of living and eating. We certainly do not find our American country people extraordinary for health; indeed, we are surprised to note how much ill-health there is among them.

If we are seeking after health, here is a verse, in all seriousness, well worth heeding. Very many perish every year from over-doing; many, no doubt, are killed "scientifically" by the medical attendant, whether of big or little pill persuasion; but how many more die miserably from "quack," or, more politely termed, "patent" medicines:

Who deals with quacks
Good understanding surely lacks.
Preserve your health;
'Tis better far than wagon loads o' wealth.
Keep a sound mind shrined in a robust body.
Tobacco shun, and toddy.
Put your foot down.
Do your own thinking. Linger in the sunshine;
Don't be a clown,
Eat simple food, and drink pure, sparkling water;
Breathe deeply of fresh air, each son and daughter.
Then you'll be well; at any rate
You "oughter!"

—*Boston Journal.*

How many we find who pin their faith to these vile compounds! Most of them are but little more than colored water. Women are especially fond of these mixtures. One preparation, largely advertised, pretends to have been discovered by some woman when, in reality, the whole swindle originated in the brain of two unmarried drug clerks. Hundreds of suffering women, rather than consult some reputable physician, have written to this imaginary dame of wisdom, and have poured out their woes and their money for remedies not worth the paper labels on the bottles. All seeking for the secret of health and eagerly grasping at each new straw of hope:

Cold broth hot again,
That loved I never;
Old love renewed again,
That loved I ever.

It is a wholesome thing, sometimes, for us to renew our youth. It is well worth while for a man, now and then, to fall in love with his wife; not that love had grown cold, but we sometimes forget how warm the flame of affection used to burn. A prominent physician, well beloved in Boston, in days not very far away, once wrote:

Home is where affection's flame,
Unalterably bright doth ever burn.

In the best of homes this fire needs a little looking after occasionally; a little fuel in the shape of some well selected present; a little incentive to brighter glowing, in the shape of endearing looks and words. The man of care and business sometimes forgets this. In his heart the same old affection remains, but he forgets that the plant of *love* is sensitive and needs care and sunshine to make it thrive. The savage nature in man forgets the faithful days of wifehood and motherhood far too early. A loving married life conduces to longevity, and there is more than simple religious sentiment in the command "in honor preferring one another." To be wise is to follow instruction, and the Bible is a book of medical and hygienic wisdom as well as a guide to piety. The truly religious man is in the position to get all the good health hygiene knows anything about. It is a scientific truth as well as a moral one that "to be virtuous is to be happy." We may not command success, but we can, if we well deserve it, and peace and prosperity is not unlikely to crown such efforts, even if there be cruel exceptions. The modern saying that it does not pay to be good, is born of morbid despair. I am sure that a decent regard for the laws of hygiene are not only possible for the rich, but for the poor as well. Wealth brings the ability to guard against danger and sickness. It provides us with suitable shelter and clothing, and wholesome food, but often wealth cannot purchase the poor man's healthy appetite and the poor man's repose and his domestic happiness. There is just about so much toil and trouble for us all of earth's children, be they rich or poor.

"Health—the poor man's riches, the rich man's bliss," cannot be purchased; it must be won. Now and then we see these sturdy old men who have lived useful, honorable lives for three-score years and ten and even to the golden four-score, and we know at a glance that strict attention to the rules of diligence, temperance and godliness, have been in most cases the secrets of health for them. They have been blessed for their faithfulness.

"Slight those who say amid *their* sickly hearths, '*Thou* liv'st by rule—what doth not so but man?' . . . . Man is a shop of rules, a well-trussed pack, whose every parcel underwrites a law." This is what the learned, sensible and truly good man, the Rev. George Herbert, had to say about it. He gave a great deal more of just such good advice in his writings which we can well afford to heed. There is great difference between repose and quietness on the one hand and inactivity and laziness on the other. General Grant insisted upon taking a normal amount of repose and sleep. After that he could awake to tremendous effort and to the accomplishment of great deeds.

Few there are who have not heard the ancient rhyme:

> Early to bed and early to rise
> Makes a man heathy, wealthy and wise.

But in spite of the common jingle it is in fact full of sterling truth. "An hour's sleep before midnight is worth two after," and always will be. *Ten o'clock* is the normal hour for bedtime in city or country, although "9.30 P.M." might be in some cases an improvement. To turn night into day and day into night is sure to bring the inevitable result—premature ageing and decay and general debility. The brilliant ball-room, the luxurious club-room, or the mysteries of secret societies, it will all come to the same result—impairment of health if the hours run too near to midnight, and worse still when the "wee sma' hours" are reached. This may be "fun," but in spite of society's decree the pleasure is not *really* worth the candle. Medical men find this out in a short practice. If the facts were better known some would take heed and mend their ways. It is possible to have pleasure and plenty of it in this world at seasonable hours. Not only the parents and older people need this caution, but particularly is it applicable for our children. At the age of ten or eleven, the child sleeps only eight or nine hours, when he needs, at least, ten or eleven, and as he grows older, the time of sleep is shortened. Up to twenty, a youth needs nine hours' sleep, and an adult should have eight or nine. With insufficient sleep, the nervous system, and brain especially, not resting enough, and ceasing to work normally, we find exhaustion, excitability and intellectual disorders, gradually taking the place of love of work, general well-being and the spirit of initiative.

It is undoubtedly true that the bribe of so-called pleasure—the dance, the late supper and the evening entertainment are very bright and tempting to our young people who cannot understand the necessity for so much rest. For them the days are far too short, and the joyous occupations of youth appeal ever for more time. If these pleasures could be had in an atmosphere reasonably wholesome it might make some difference, but when we consider the vitiated air loaded with impurities of all kinds and often containing just enough vitality to permit of sufficient respiration beyond the fainting point, we wonder why more are not made sick; we cannot wonder why so many do die from pneumonia after these parties and balls, and the injury is not *all* owing to low-neck and short sleeves, for quite as many men as women succumb.

Here is a clipping from one of our health journals worth thinking about: *Most people try to prevent the entrance of fresh air in winter weather. Plenty of diseases are eager to call at houses where there is poor ventilation. It is more desirable to pay for an open fire than for medicine, and the fire is one of the most satisfactory of luxuries* If we could have more of the old-fashioned pleasures in old-fashioned houses, and, above all, in old time honor and dignity, it would be well. Arrive late at one of our fashionable balls or parties and enter the poisonous atmosphere if you can without noticeable disgust—an atmosphere overheated and supersaturated with all kinds of odors, mostly impure, loaded with dust and poisonous gases—what a place for these excited, nervous, tender people to work out the list of dances. Strange pleasure is such toil under such conditions! Who would endure this if forced to it? Ventilation is a serious problem. It is absent in most of our homes, public buildings, churches, schools, railroad trains and stations, and little is being done to present practical systems for reform in this important direction. It seems almost more inexcusable in our schools than anywhere else. The only hope for reform is in educating public opinion to recognize the necessity, and to demand reasonable recognition. It must come before long.

Another secret of health is not to think about it too much—not to dwell upon the possible dangers of our environment, but at the same time to cultivate good common sense, which includes reasonable prudence. Good old Horace wrote long ago that

The death most to *fear*
Is the death we least dream of.

And Sweitzer has wisely declared that "It is a truth that few things render a man more miserable than a morbid fancy that he is so." Occupation is an antidote for morbidness, and exercise is a rule which must belong to everyone's life if able to move about at all. Wholesome exercise, not the artificial "physical culture," so-called of regulations of movements at so much an hour. Rich or poor can take the best of all exercise—the walk. Some can enjoy what is to many the most delightful—horseback riding. Others can have the boat, but most men and women have simply the common drudgery of life. Even this if carefully attended to can be made to serve wholesome ends. We may look longingly at our more wealthy neighbors and think our lot the harder.

Them what is rich, them rides in chaises;
Them what is poor, them *walks* like blazes,

is an old-fashioned complaint. I am not sure that the patient walker will be the complainer later on! Herbert has said:

Envy not greatness,
  For thou mak'st thereby
Thyself the less
  And so the distance greater.

Wealth will not purchase health. We read only a few days since that on his sick-bed a wealthy young heir to millions of dollars exclaimed in despair: "Would that I could obtain with all this money one-half day of vigorous health!" All homes have in some secret recess a skeleton grim and sorrowful. We need the sympathy of kind friends, and miserable indeed is he who has it not. A kind word has saved many a soul and body from death. It blesses alike the donor and the recipient. How easily said it is, and how pleasant it is to say it. God bless the man who is generous enough to do little acts of kindness in his daily life, though his own heart may ache and throb with hopeless pain and injury.

One factor of great value in the maintenance of health is the daily sponge bath. The following clipping from the *Springfield Republican* is worth consideration:—

Whether the opponents of ablution fear the shock of cold immersion, or whether they dread the cleansing stimulation thus applied to the excreting skin surface, their objection must appear to most persons possessed of ordinary health and vigor to threaten impairment of both by fostering uncleanliness. It is true, however, that experience has often proved the mischievous effect of its misuse—in cases, for example, of cardiac weakness or general exhaustion. Cold bathing in like manner is not without its occasional risks. It is not suitable for persons enfeebled from any organic cause, though mere nervous languor is often braced and benefited by it.

As regards one advantage derived from bathing—*i. e.*, its cleansing property—there is no reasonable ground for difference of opinion. Less practiced by one people than another though it may be, there still is commonly recognizable a constant habit of ablution, and this fact in itself attests at least an almost universal belief in the necessity of insuring cleanliness by means of washing. In bathing temperature is of course a chief consideration. For the robust, cold immersion followed by rapid friction is a valuable tonic of nerve, skin and heart function. For less vigorous constitutions—those, for example, which have been tried by disease, and those of young children—the addition of heat up to the body temperature point is only judicious.

Another aid to longevity is the open fire place. A fire of wood in a sunny pleasant room, partly heated by some good hot air furnace affords the best method of heating. Sunshine will not only aid in reducing the coal bill but what is of much greater importance will strongly tend to the preservation of health. Much of our consumption is due to houses set low upon the ground—which is always more or less damp. The late Dr. Bowditch, one of the most eminent authorities in the world in matters relating to consumption, has called attention to the fact that damp, wet soil about homes, is a potent factor in producing consumption.

Too often through mistaken sentiment about the beauty and value of trees, our homes are over shaded, and the warm life giving sunlight excluded.

Our bedrooms should have plenty of sunlight, and the house throughout should be moderately well warmed with hot air—where more warmth is required—the open fire place with a fire of wood gives the best warmth we can obtain artificially. The open fire is a tonic of no mean value. Nowhere in the house is it more needed or more welcome than in the nursery. It is well worth while to see to it that the nursery fire is always ready. In the dining room it certainly contributes cheer, aiding in digestion and making the meal time what the Germans always call it "blessed," " gesignite mahlzeit," is part and parcel of a repast in the Fatherland, whether it be in palace or in hovel.

Health is then a word that everyone has *some* notion of, but perhaps one will have a clearer idea of it when we discover that long ago *health* was "wholth," and comes from the word *whole*, or hale. "They that are *whole* need not a physician," says the sacred record.

We all recognize the value of a sound mind in a sound body, but while we all pretend to make an effort to secure both blessings the methods employed differ very widely.

We find in the homes of medical men conditions existing which would no doubt immediately attract their notice if such obtained in the homes of their patients—and on the other hand we find medical men so ignorant of ordinary sanitary laws, and so negligent of the safety of their own families we cannot but wonder how they can sensibly advise those who seek their professional advice on matters relating to ordinary hygiene. It is a truth that the profession of medicine contains many members for whose benefit and that of possible clients a considerable amount of instruction in personal hygiene is very seriously needed.

One of our most distinguished physicians of recent times, upon being asked why it was that, in the midst of disease and while often overrun with hard work, he preserved such good health, gave as a most important reason, next to the avoidance of worry, that he never entered a house, "even for a moment's" call, but that he carefully removed, if the season required one, his overcoat. There is a great deal of sound advice in this, which not only men but more especially women may follow with advantage. It might be well at this point to mention the habit that some people have of calling at the door "just for a minute;" they "can't come in," but keep their unwilling hosts standing in the cold at the risk of sickness to hear some of the latest gossip.

This is no doubt done very thoughtlessly, but we may safely class it in the list of very bad habits. We see, then, in how many ways in our daily life we may with a little care avoid much of sickness and suffering, and also how easily by a little painstaking we may be able to contribute to others' good health and happiness as well as to our own, and more especially to the lasting welfare of those we love better than ourselves. "But you are to consider throughout," says Carlyle, "much more than is done at present, and what it would have been a very great thing for me if I had been able to consider, that health is a thing to be attended to continually; that you are to regard *that* as the very highest of all temporal things for you. There is no kind of achievement you could make in the world that is equal to good health." Whether in our homes or in our public resorts, whether in our habits, food or clothing, or in our daily life of contact with our relatives, friends or strangers, *health* is the blessing which every intelligent, normal, generous individual is in duty bound to consider. The citizen is required to regard the safety and welfare of the commonwealth in which he lives as a sacred trust committed to his care. The maintenance of health is worthy of his best efforts. We do not need to be very old to be able to bear witness to the wonderful advance in practical hygiene during the past few years. It is easily recognized, and the work is going on bravely; but what a tremendous amount remains to be accomplished!

I cannot conclude this rambling talk with any better words than those of the God-fearing, sturdy, Scotch physician, Dr. John Brown, in his little book called "Health":

"Keep a good hold of all these homely and sturdy virtues, and add to them temperance and diligence, cleanliness and thrift, good knowledge, and, above all, the love and the fear of God, and you will not only be happy yourselves, but you will make this great and wonderful country of ours which rests upon you still more wonderful and great."

Food Adulteration.

Ninety million dollars' worth of stuff used in the adulteration of food is sold annually in the United States. At least so says a writer in the Philadelphia *Star*, who claims to have looked the matter up.

Is the Early Recognition of Cholera Asiatica Possible?

BY HUGH HAMILTON, M.Sc., M.D.,
Of Harrisburg, Pa.

EVERYONE is much interested in this question. In a recent article, by an authority on cholera Asiatica, Dr. E. O. Shakespeare, read before the Philadelphia County Medical Society, on September 14, 1892, and published in the *University Medical Magazine*, Vol. V, No. 1, October, 1892, p. 75, says: *We do not, at present, know how to recognize Asiatic cholera in time to safely guard the people against its deadly power.*[1] Exactly *how much time* must be used for such recognition is a matter of some importance. Dr. Shakespeare remarks further down the same page that "There is reason to believe that the awful calamity which has befallen the city of Hamburg, Germany, is traceable to the criminal neglect of a single man."

Upon the cause of cholera Asiatica, we admit it to be due to a *constant* cause known as Koch's Comma Bacillus. Its entrance into the body is solely by the intestinal tract, *i. e.*, the *nose* and *mouth* by the *hand;* as the avenues of its reception are limited, the prophylaxis is easily executed. Disinfect the hand.

When we have the cholera Asiatica to deal with, its detection is of *vital* moment; no one questions these aforesaid facts. Never before did bacteriological *art* become *science* so successfully as in the demonstration readily of the comma bacillus.

The proceedings of the Society of Physicians,[2] of Hamburg, Germany, in extraordinary session of August 30, 1892, speaking upon the entrance of the plague into that city, Doctor Reinhard stated, respecting the death of a suspicious case on the 17th of August, 1892, that it was thought not to be cholera Asiatica by both himself and Drs. Erman and Hahn—hence no bacteriological examination of the contents of the intestines was made.

On the 18th of August, however, the first case of cholera Asiatica was brought to the hospital; on the 19th a post-mortem was made in the presence of Drs. Erman, Police Surgeon Wahucan, and also Hahn and Lührs; the latter undertook the bacteriological examination; but, owing to the extreme heat, were unable to secure good cultures upon gelatine capable of giving positive results (why did they not use a constantly cool chamber, say 37-38°C.); so that they were compelled to make their cultures upon potatoes, which took them until the 22d before the announcement was officially made to the authorities. Between these dates to the 22d there were 369 cases and 128 deaths from the disease.[3]

In Altona, near Hamburg, Regimental Surgeon Kosta stated that Surgeon Weisser had, on the 19th of August, in the morning, made a post-mortem of a suspicious case of cholera Asiatica, and immediately commenced a bacteriological examination, and by the afternoon of the 20th of August had determined it was cholera Asiatica—*about thirty-six hours.*

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[1] The italics are in the *University Medical Magazine.*

[2] *Deutsch. Med. Wochenschrift*, No. 37, p. 838–1892.

[3] *Deutsch. Med. Wochenschrift*, September 15, 1892, No. 37, p. 839.

These cultures were confirmed by Prof. Koch as being cholera Asiatica.

The histories here related of the ravages of the plague in Hamburg and the surrounding towns is most interesting, and, furthermore, prove most conclusively that the comma bacillus was found in from 24 to 36 hours after post-mortem examination of the suspicious cases in pure cultures.

Dr. Carl Lauenstein particularly deserves credit for receiving, on the 21st of August, in the Seaman's Hospital, a suspicious case, and by the 22d had discovered the comma bacillus in the dejections, and on that day made his official report to the authorities.

At the extra session of the Berl. Med. Gesellschft, on the 7th of September, 1892, Prof. R. Pfeiffer read an interesting paper upon the method to be pursued in bacteriological examinations for the diagnosis of cholera Asiatica, by gelatine plate cultures, in from 24 to 36 hours. All simple microscopical examinations, not free from doubt, must be confirmed by the gelatine plate process, *i. e.*, cultures, and it is the only method to certainly depend upon.[1] Every suspicious case should, when possible, be subjected to this scrutiny.

Under normal conditions the recognition of the comma bacillus, by gelatine cultures, may be perfectly made, and the diagnosis certainly declared in thirty-six hours at most. Upon this diagnosis depends the lives of our nation; to neglect the means to recognize it, as early as possible, becomes criminal and invites fearful calamity.

At numerous important centres bacteriological stations should be established with complete apparatus and competent persons to quickly and certainly investigate suspicious cases at the expense of the State and Nation. Then we would have a sure method to determine what we had to do; to skillfully treat the patient and protect their families, other households and communities.

Every proper and firm authority ought to enforce the most recent information to obviate its dissemination. Whenever found strict quarantine offers safety to other places.

Isolation of the patient, complete antisepsis of the persons of the sick and his nurses; destruction by fire of the patient's personal effects, and, in case of death, if possible, cremation of the body.

So far all our health authorities have been alert, done well and successfully, but 1893 still stares us in the face, with diarrhoeas now a prominent factor in many diseases.

Let us be prepared to know *soon* the presence of the plague, so that needless alarm may not frighten us nor subject persons and places to unnecessary trouble and expense.

The usefulness of proper and prompt bacteriological examinations would prove to be of inestimable value, although apparently quite expensive. We think that *early* recognition of this disease is *possible*[2] and singularly definite.

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[1] *Deutsch. Med. Wochenschrift*, September 8, 1892, No. 36, p. 815.

[2] *Deutsch. Med. Wochenschrift*, September 22, 1892, No. 38, p. 858.

Sanitary Day.

BY JOSEPH F. EDWARDS, A.M., M.D.

THE State Board of Health of Pennsylvania having referred to the committee, of which I am chairman, the suggestion, emanating from his Honor, the Mayor of Lebanon, Pa., in which he petitions this Board to recommend to the legislature the establishment of two Sanitary Days in each and every year, for report; this Committee has the honor to report as follows:

The first step was to address a communication to the secretaries of thirty-seven health organizations (thirty-five States Boards of Health, and the Provincial Boards of Health of Ontario and Quebec) in which their opinion was asked as to the advisability and feasibility of seeking legislation whereby one or more days in each and every year should be specifically set aside to be devoted to such practices or observances as would be calculated to draw attention, in an especial manner, to the importance and necessity of an acquaintance with and observance of the mandates of sanitary science. The replies to these communications were most encouraging. In all twenty-two answers were received; of this number fifteen (Delaware, Maryland, Massachusetts, West Virginia, Michigan, Indiana, Oklahoma, South Carolina, Florida, Kentucky, Iowa, Rhode Island, Ohio, Kansas, and the Province of Ontario) heartily endorse the proposition; trust that it will be realized, and promise to follow in our footsteps in their respective localities; five (Missouri, New Jersey, Connecticut, Minnesota and the Province of Quebec) do not think such a move advisable or feasible; while two (California and Illinois) are non-committal. From the tenor of the letters received it would seem that we would have good reason for assuming that if the innovation was made in Pennsylvania, and found to work satisfactorily, it would be, very soon, imitated in all other States.

Having thus ascertained that such an idea, broadly outlined, would meet with the sanction and approval of the official health authorities of a majority of our States, your committee next took into consideration the most feasible and practicable method of making the conception a reality. The Secretary of the State Board of Health of West Virginia, Dr. N. D. Baker, very truly says, that "no appeal to children is so successful as that which gains for them a half holiday; if then such a holiday could be gotten for them through the instrumentality of the State Board of Health, all eyes would be drawn to the unusual occasion, and a rare chance would thus be offered to the State Board to reach the people." . . . . . This "would produce a lasting impression upon the children, who, as the rising generation, are so soon to be the body politic, in the direction of better sanitation."

Dr. Henry B. Baker, the Secretary of the Michigan State Board of Health, very strongly advocates the "setting apart, by law, of a day in each year, on which to present, locally, to the people of every township, city and village, the facts and reasons why expenditures for public health work are in the public interests," while Dr. Baker, of West Virginia, voices this same idea, when he suggests that "instructive pamphlets, written in popular, readable style, could be distributed to the people by sending them to the teachers, with instructions to see that each child carried one home." "I would suggest," says Dr. Baker (of West Virginia), "that the teachers be asked to read the pamphlets to the children and explain the nature of the subject which had caused the holiday, before dismissing them. Then the local authorities might issue proclamations, posting them side by side with the circulars of the State Board of Health." "Articles on sanitation might be furnished; in proof, to all the papers, with the request that they publish them on the appointed day." Dr. J. F. Kennedy, the Secretary of the State Board of Health of Iowa, commends our suggestion in these words, "Healthful recreations; field sports; exhibitions of physical culture; popular addresses upon hygiene and sanitary subjects; special preparation in the schools, by the juveniles and teachers, upon health topics; the 'facing about' of a State or a nation toward so grand an object as the physical uplifting of this and coming generations, all would afford such abundant opportunities for helpful pastime that I truly wonder it was not thought of before." Dr. Baker (of Michigan) asserts that, "If proper work is done on this one day proposed, I think it would be one of the most important measures for the advancement of public health that has ever been proposed in this country." Dr. C. O. Probst, the Secretary of the State Board of Health of Ohio, suggests that "It might be possible, by recommendation, to interest the ministry in such a movement, and have services in the different churches with 'Cleanliness is next to Godliness' for the text."

Dr. Peter H. Bryce, the Secretary of the Provincial Board of Health of Ontario, remarks that "the mere discussion in the Legislature of a Bill for this purpose would be of advantage in having legislators set forth their views on public health matters."

Dr. C. W. Chancellor, the Secretary of the Maryland State Board of Health, thinks that "if we cannot devote every day to sanitary work, we may, at least, have a *Sanitary Sabbath*, akin to the Christian Sabbath, and thereby ally cleanliness still nearer to Godliness."

The Secretary of the Board of Health of the State of Delaware, Dr. E. W. Cooper, says: "The masses do not understand the meaning of the words hygiene and sanitation. . . . On sanitary day these words could be made so plain that the fool need not err therein as to these subjects. I am sure that with a "Sanitary Day" we would reach a class of persons who have no knowledge of health laws."

These few quotations will serve to show the spirit in which the suggestion of a "Sanitary Day" has been received by fifteen out of twenty-two official health bodies who have replied to my communication, while it would seem fair to assume that of the fifteen from whom no reply was received, an equal proportion would be found favorable, as I attribute the failure to reply mainly to the fact that my communication was overlooked. In fact, it is my belief that should this innovation be satisfactorily and successfully inaugurated in Pennsylvania, it would find imitation in every State, for I am sure that no one questions the benefit to be derived from such a move, the only doubt being as to the expediency of asking for such legislation.

Receiving, therefore, the active and unqualified commendation of so many, and the qualified approval of more, of our State Health Boards, your Committee respectfully offers the following suggestions:

That the State Board of Health, etc., of Pennsylvania, should recommend to the Legislature of Pennsylvania that the first day of May, in each and every year, should be specifically set aside and designated as "Sanitary Day," a day upon which, by the means hereinafter recommended, the attention of the people of the State shall be called, in an especial manner, to the importance of a familiarity with, an observance of, and the benefits to be derived from Sanitary Science.

That upon this day there should be only one session in the public schools of this State, and that, at this morning session, the teachers in the various public schools shall be required to explain to the pupils the meaning and intent of hygiene.

That the State Board of Health shall prepare or have prepared popular pamphlets on hygiene, which shall be furnished to all the teachers of all the public schools of the State (and all private schools if the authorities thereof shall so desire and request) in number sufficient to furnish to each pupil one copy, which the teacher shall request the child to take home to its parents.

That the State Board of Health shall prepare, or have prepared, annually a short, popular article epitomizing the progress that has been made in sanitary science during the preceding year, and that they shall send a proof of this article to every newspaper in the State, with the request that this article, and editorial comments thereon, shall be published in said papers on the first day of May, or in the case of papers not published on that day, in the issue next immediately preceding such date.

That the State Board of Health shall, by circular letter, request all the clergymen of this State to call attention to the observance of "Sanitary Day" on the Sunday immediately preceding the first day of May.

That the State Board of Health shall, through the medium of the local newspapers, recommend and urge that special athletic sports shall be organized in every locality for the afternoon of "Sanitary Day."

That, through this same medium, the State Board of Health shall urge the convocation of local mass meetings on the evening of "Sanitary Day," at which some designated representative of "The Board" shall address the people upon the sanitary needs of the locality, and the people shall discuss and decide upon the sum of money which they consider it fit to recommend to the proper authority to appropriate for sanitary work in the locality during the ensuing year.

That this report may be made complete your Committee would append the following bill, which it would ask the Board to recommend to the coming Legislature of Pennsylvania for enactment:

AN ACT

To designate a special day for the purpose of more particularly interesting the people in the subject of Sanitary Science.

SECTION I.—*Be it enacted by the Senate and House of Representatives of the Commonwealth of Pennsylvania, in General Assembly met, and it is hereby enacted by the authority of the same* that the first day of May in each and every year shall be known as "Sanitary Day."

SECTION II.—That upon this said first day of May there shall be only one (morning) session in the public schools of this State.

SECTION III.—That it shall be the duty of the Superintendent of Public Instruction to co-operate with the State Board of Health and Vital Statistics in measures looking toward such an observance of "Sanitary Day" as will be best calculated to arouse a public interest in the value of Sanitary Science.

SECTION IV.—This act shall take effect immediately, and all acts or parts of acts inconsistent herewith shall be and are hereby repealed.

Measles.*

(RUBEOLA.)

BY C. N. HEWITT, M.D.,

Secretary of the State Board of Health of Minnesota.

PARENTS, and particularly mothers, are requested to read this little paper carefully to learn how they may save their own and other children from needless sickness, possibly deformity and death, by co-operation with the Local Board of Health in the control of measles, as of other infectious disease.

What is it? It is one of the eruptive fevers usually recognized by its peculiar "catarrhal" symptoms and characteristic "rash." It has been confounded with the first stages of small pox and scarlet fever, but this may be avoided by isolating the patient for two or three days, when the fact will be apparent.

Its specific poison or infection is produced in the rash, which contrary to common opinion, invades the membranes of the nose, throat, lungs and bowels before, and often more severely, than the skin. It escapes first in their secretions, and afterwards from the eruption on the skin. The first is the most virulent and abundant, and most difficult to control; the last is the least virulent and most readily destroyed.

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* Issued by the State Board of Health of Minnesota.

But is it worth while to attempt to restrict or control measles? Most people and many physicians, advise "that children be permitted to catch the disease and be through with it, as the risk is slight and the mortality trifling." The time has passed to advocate the "catching" of any disease, and as to the danger and mortality of measles let the following facts drawn from our records of the last five years answer. Total deaths from measles in that time in Minnesota, 850, an annual average of 171. 1.2 per cent. of total deaths from all causes, or 131 deaths to 1,000,000 living.

In the mortality of the last five years 74.12 per cent. were children under 5 years of age, and more than half (52.35 per cent.) under 2 years of age. Neither diphtheria nor scarlet fever cause so great proportionate mortality under 2 and 5 years of age, as does measles.

Seasonal mortality, 45.29 per cent. occurred in spring; 25.46 per cent. in summer; 20.59 per cent. in winter, and 7.64 per cent. in autumn.

It is a great mistake to say that the mortality after measles is due rather to complications than to the disease itself. The most common are affections of the lungs and bowels, and are but exaggerations of the usual conditions of the disease, the severity of the attack being expended on the mucous membranes instead of on the skin. In the great majority of cases the disease is sufficient to account for the death, without calling on any other cause. As to the "sequelæ," as they are called, those affections which so often follow directly in the wake of measles; sore throat, nose, eyes and ears, scrofula, dropsy and other affections, there is no dispute as to their frequency, severity and importance. Now comes another objection. "But it is easier borne in infancy and childhood than by older people, and it cannot be prevented anyway." To that the reply is this: The mortality and disability following the disease justify an effort which has repeatedly, and recently, been very successful. In England, where the mortality is greater than from either scarlatina or diphtheria, obligatory notification and isolation, have worked very important reductions in both sickness and death rate where enforced. So they have in our own State. It is our duty to make the attempt more general.

What to do to prevent or restrict measles. Mothers can do more than any one else because they see the first symptoms and can isolate a child promptly who is suspected of the disease. It is often a question to mother and physician whether a rash is that of scarlatina, measles, or some less important skin affection. The safety of the child, in any event, is best assured, by sending it to bed, or by a few days isolation. A day or two of quiet, and a hot bath will settle the question, and if either of the diseases is found, early care promotes the safety and recovery of the sick, and at the same time the safety of other children in the family, the neighborhood, and particularly in the school, which the children of the family attend. This education of mothers is the first and most important duty of the Local Boards of Health as respects the management of all infectious disease.

Next in importance is the co-operation of the school teachers, whom supply with this and all other circulars. When measles, or other infectious disease appears, notify them immediately of their duty to co-operate (see Chap. 132, Laws of 1833)[*] and give the name and address of affected families, with request to exclude all children from such families or who visit them. Teachers should notify the Local Board of Health of children sent home from school who are too unwell to study, and should not permit a child with fever, hoarse or croupy cough, or well marked eruption on skin, to remain at school without the permission of the Board of Health.

Houses in which are the sick of measles, or other infectious disease, should be placarded, the children restricted to the home, and no visiting permitted, The men of the family doing outside work, and not attending the sick, may go to work as the danger from clothing infected with this disease is not great in the open air, away from children. New cases in the family of the first case will develop, if at all, by the tenth or twelfth day. If they do not, hot baths for all, with boiling water for infected clothing and bedding, and a thorough scrubbing of room and furniture will clear the record and remove occasion for further isolation. Patients to be isolated till "rash," "scurf," and "cough" have disappeared—from fourteen to twenty-eight days.

Care of the sick of measles. Put in a quiet, clean, well ventilated and isolated room with the least furniture, carpets, etc., consistent with comfort. The nurse should wear an apron large enough to cover from neck to wrists and feet, while on duty, and take other reasonable precautions. The well children should be kept as far from the sick as possible, in another building, if practicable.

Thorough anointing all over with simple ointment (one part mutton tallow or white wax, and two parts fresh lard melted separately and stirred till cold) will do much to keep the virus of the rash on the skin or in the underclothing. All discharges from mouth, nose or eyes, should be collected on rags and burned, or on handkerchiefs or towels, and immediately put in hot water and boiled. Discharges from the bowels should be put into a vessel containing a cupful of fresh lime water.[†]

These attentions and precautions, easy to take and simple to use, will reduce the chances of the spread of measles from a given case, or family, to small proportions, particularly among the very young, where it finds the most of its victims. In no one of the infectious diseases is the co-operation of mothers more important, and in none will it be so promptly given when they come to know the truth of the matter as here stated.

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[*] Sec. 26. That no principal, superintendent or teacher of any school, and no parent, master or guardian of any child or minor having the power and authority to prevent, shall permit any child or minor having scarlet fever, diphtheria, small pox or any dangerous infectious or contagious disease, or any child residing in any house in which any such disease exists, or has recently existed, to attend any public or private school until the Board of Health of the town, village, borough, or city, shall have given its permission therefor: nor in any manner to be unnecessarily exposed, or to needlessly expose any other person to the taking or to the infection of any contagious disease.

[†] Lime Water is the clear solution of quick-lime. Take best quick-lime in lumps, put in a pail, pour on one-third as much of water, cover closely and slack till it is a fine powder or creamy fluid; one part of this to three of water will make a saturated solution. Add water in that proportion to the mixture, stir well and then pour on half a teacup of kerosene which will protect it from the air and preserve its strength. Use the solution as needed, and the solid matter, mixed with more water, can be used for whitewash or thrown into the sewer or out house.

Save Your Teeth for Health Sake.

BY G. W. WILLIAMS, D.D.S.,
Of Germantown, Pa.

To have good health you must have good teeth. You cannot expect to have good health with a mouth full of badly decayed teeth and diseased roots. Do not get the idea that a tooth is only worth fifty cents and allow your teeth to decay until they ache, and then seek the slaughter-house dentist and have them extracted.

Too many people think that the services of the dental profession are only for the wealthy. Whatever may be the cause for such an impression, it certainly exists.

Dental service for at least one-half of our people is limited to extraction of aching teeth, and this only as a last resort, after all home remedies have failed to give relief. No thought is given to remedying the loss; in fact it is looked upon as the usual course of nature that teeth should decay and be lost. Saving them is never thought of, and replacing by artificial teeth is one of the luxuries of life, that, to this class, is a sort of era in their existence. It is looked forward to and discussed for years, it may be, and when finally the investment is made it is considered almost a useless expenditure—"something I could get along without."

Now this estimate of dental service is all wrong. No such feeling exists concerning any other professions—especially that of medicine. The physician is looked upon by the poor as well as the rich as a friend to whom they go in time of need. The question of cost is not uppermost in the mind, but relief from sickness and suffering, either present or threatened.

The fact is, the people do not understand so well what benefits skilful dentistry can confer upon them or they would appreciate it more highly.

There is no reason why dental and medical service should not stand on an equality in the minds of the general public. They do not, though, and one duty of our profession, both to the people and ourselves, is to educate—not so much the fortunate few who already appreciate and patronize dental practitioners—but the many who place little or no value on their teeth and make no effort to save them.

Decayed teeth and no teeth are the cause of a considerable amount of ill health that exists among so large a percentage of our people.

Good teeth are a necessity for a long life. Artificial teeth are, of course, good substitutes for those who have lost their natural ones through neglect, or those who were unfortunate in having soft teeth and in course of time had to have them extracted, but they can never take the place of good, sound natural ones.

THE ANNALS
OF HYGIENE.

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EDITORIAL

Letters on Health.

CLEANLINESS.

(Continued from November issue.)

MY last letter contained a promise, if you remember, to define for you what cleanliness really means. It may seem to you very unnecessary for me to even think that intelligent persons should not well understand the full import and meaning of this word; yet it is undoubtedly a fact that the word is not understood in all of its significance.

Let me start out with the broad proposition that anything organic, anything that has had life, if left in the close vicinity of human life, when its own life has departed, will prove detrimental to this human life; let me remind you that nature's inexorable law is that all matter shall be always changing its relative condition; that not for two consecutive seconds does the matter of the world hold identically the same relation, each particle to another.

Do you understand my idea? Do you catch my thought? That while there is to-day no more matter than there was in the beginning, and no less than there will be at the end of time, that there have been no two consecutive seconds in the history of the world when the particles of this matter have held the same relative conditions to each other; the existence of the world and of all therein has been due to a constant change in the relationship of matter. This idea can be grossly grasped when you remember that what we call death in some organic form has been necessary for life in some other organic form; the particles of matter in the first organism have been so re-arranged in their relative conditions that they have been enabled to give to, or rather, perpetuate life in, the second organism. Nature has provided for this molecular change, and nature insists that it shall go on, and from this grand, inexorable, fundamental law of nature, do I gather my first great idea of what constitutes cleanliness. If, in any way, you interfere with nature in her constant changing and re-arrangement of her particles of matter, you are, thereby, in opposition to cleanliness and in league with filth.

If you have about you any putrefying organic body, be it of the magnitude of an elephant or the microscopic invisibility of a microbe, you are unclean. I do not mean, literally, that a single invisibly small organic body undergoing putrefaction will do you harm, but I use this strong illustration to demonstrate a principle. Now, I think, you can grasp my initial, fundamental idea that any *so-called* dead organic matter constitutes uncleanness so far as living human life is concerned. Why do I say "*so-called* dead organic matter?" Because, in reality, there is no such thing as death of organic matter; that is to say, the organized body may die, as a whole, it may cease to functionate as an aggregation of molecules, but the individual molecules do not lose life; if they did they would not be able to give life to other organic bodies. A familiar example of what I mean is seen in your roast of beef; when the ox is slaughtered he is said to be dead, yet the individual organic molecules certainly cannot be dead, else how could they give life to your body.

My idea in thus enlarging upon the mutations of organic matter is that I may suggest to your mind a train of reflection upon the subject of cleanliness. Remember, then, that it is changing organic matter that gives rise to filth. A piece of coal you may carry in your pocket for a year and while your pocket may be dirty, in the ordinary understanding of the term, it will not be so from our standpoint; while a piece of beef of equal magnitude would soon make of its bearer a person to be shunned because of his filth.

Many years ago, before the time of Christ, there was a certain sect of Jews known as "Hæmerobaptistæ," whose sole distinguishing characteristic from all other sects was the fact that their religious creed consisted upon daily bathing of the whole body. Now these Jews were perfectly clean from one point of view, but this same scrupulous care exercised by them to remove so-called dead organic matter from the surface of the body is necessary in many other ways that we may attain what we can safely and appropriately style cleanliness. He who washes daily, even hourly, yet fails to ventilate his rooms or his clothing; he who allows organic refuse of any kind to remain in the vicinity of his home; he who allows his water supply to be contaminated; he who fails to air his bedding; he who in any way does that which tends to hinder nature in her natural management of organic molecules, is thereby guilty of fostering uncleanness.

As I have said, my idea in reflecting upon material mutations was to suggest to you a train of reflection; to come down to practical questions, I am sure that you, as an intelligent person, will now be prepared to comprehend the real meaning of the word cleanliness, and your thought will soon lead you to see that it means much more than mere washing of the body. Now, think a little more and answer me if you are not quite sure that from our standpoint of cleanliness there are very few persons or places in the world that are as clean as they ought to be.

Now, let me remind you that the kind of filth of which we have been talking is the cause, in reality, of all contagious disease; that it is upon this changing organic matter that the germs of disease flourish, propagate and multiply; that if this filth were not, the germs of disease would perish of starvation; and then I will ask you to go on reflecting until I am sure you will reach the conclusion that a man cannot commit a greater crime against his neighbor than to maintain uncleanly premises.

If you assault a man in the street with a club, the punishment swiftly follows; if you assault your neighbor's health and life with your dirty premises, no notice is taken of your crime. Does this seem right? I am sure that reflection will convince any reasonable person that it is all wrong.

Let me, therefore, ask you and all who may read this letter to reflect seriously upon the necessity of making uncleanness a crime. Rightly viewed, seriously reflected upon, the maintenance of filth becomes as much of a crime as is the shooting of your neighbor and much more of a crime than robbing him of his wealth.

We must first enlist the sympathy of the people, then can we confidently ask their representatives in the legislative halls of the State and Nation to ordain that no man has the right to endanger the health and life of his neighbor by a criminal disregard of cleanliness.

A Word to Instructors in, and Directors of, Physical Culture.

WE learn from the daily papers that, in connection with the department of physical culture in the Drexel Institute of this city, a normal course of instruction has been organized, designed for the training of directors of physical development. Recognizing that a systematic study of physical culture was becoming a factor in both public and private schools, the directors of the Institute have concluded to help forward the movement by supplying competent and thoroughly equipped instructors and directors.

This is a good move, and if properly carried out, will work wonders for the material development and general prosperity of our country, but, a word of warning would seem to be not out of place.

Teachers of physical culture are very prone to overlook the inevitable law that reaction always follows excess; they are too apt to use physical culture as a means of strength rather than of health. Greece and Rome, in turn, fairly worshipped physical culture and thereby secured, for a time, undisputed mental and physical supremacy, but they carried this worship to excess, with its inevitable reaction of degeneration and decay.

Let us profit by these examples of the nations of antiquity; let us modify our zeal for physical culture that the development which we thereby secure shall be permanent, lasting improvement in the health and physique of our people.

Let us, profiting by the experience of others, so ordain, that our culture shall be a culture for health; a culture looking rather towards a gradual improvement of the physical condition of the race than a culture designed to secure personal, individual muscular strength.

The Ventilation of Churches and Public Halls.

WHO has not felt a fluttering of the heart and a sensation of suffocation; an impulsive, instinctive tendency to gasp, as it were; to take an extra long, deep inspiration when in church, theatre, or any public hall or room in which it is customary for large numbers of persons to periodically congregate? When next you do experience this very unpleasant sensation do not fail to remember that it is due to a deficiency of oxygen and an excess of carbonic acid in the atmosphere that you are breathing. It is a fact that in the very large majority of public buildings there exists a most reprehensible lack of means for efficient ventilation, and that even such ventilating facilities as do exist are not properly made use of.

MOSQUE DE LA PLACE DU GOUVERNEMENT—ALGIERS.

This church, in far-off Algiers, which we depict, will serve to suggest to us a comparison between churches and other buildings, from the standpoint of so-called natural ventilation, that exists not only in far-away Africa, but that is to be found in all the cities of all civilized countries of this great big world.

Look at the immense blank wall spaces, perforated only by a few narrow slit-like windows, and then look over the top of this church and see the building, nearly the whole front of which seems to consist of windows. It is true, as you may suggest, that this is an old church and that we do not now build them as was customary in by-gone days, but while we may not, possibly, go to the extreme that this picture represents, it is yet an undisputed and indisputable fact that great blank walls and paucity of windows is the rule in public halls of to-day.

The desire for large blank interior walls for decorative purposes and the superior spiritual nature of artificial light derived from candles and lamps over that entering from without, through windows, are doubtless the reasons why windows are so scarce and so small in our churches. Within this Algerian church there is to-day, we doubt not, some air that has been therein for centuries, being breathed and re-breathed and breathed over and over again until its degree of impurity can be better imagined than described.

We would that a new departure could be made in church architecture, whereby an abundance of large and easily opened windows should be introduced; but, pending this much-desired innovation, we would suggest to the authorities of our churches and public halls that they should see to it that all of the windows are kept open all the time when the building is not occupied.

We must never forget how necessary to health is pure air; we must never forget that while one may live for weeks without food and for days without drink, he can live but a few minutes without air, and since air is so necessary to life we can readily believe that pure air must be very essential to health.

We must not forget that churches and public halls are visited by all kinds of persons with all kinds of diseases, and if it is necessary that we should ventilate our living rooms at home, it is a hundredfold more so that we should have pure air in our churches and places of public gathering.

In conclusion, the essence of our remarks is to urge upon those in charge the importance of observing the simple and easily obeyed injunction of keeping all windows open at all possible times.

Custom Breeds Tolerance.

ONE of the most generally used arguments of those who do not believe in the life-saving efficacy of hygiene is to point to certain insanitary or unhygienic conditions, surroundings or practices, in spite of which the individual or the masses have lived in so-called health; *ergo*, say these people, hygiene is all nonsense; disease comes by chance; health is accidental; one may as well do and live as he chooses, when "his time comes" he will die, and if he is to be sick he will be so in spite of all precautions.

If we say to a man that the streets of a city should be wide and the buildings not too high, so that the light and influence of the sun is excluded from the streets, this caviller will point us to the street in Algiers, which we herein depict, and ask us whether we wish better health than is enjoyed by the Arabs whom we see walking this narrow, dark, gloomy, vault-like street.

A STREET IN ALGIERS.

This person will not, perhaps, remember that it is the people of modern, wide-streeted France, directed by the superior intelligence of the men of broad-avenued and sun-lighted Paris, that have conquered and subdued and made vassals of the people of the narrow-streeted, sunless, vault-like cities of Algeria.

These cavillers seem to forget that in order to rightly estimate great social problems, single, individual experiences must be always subordinated to general deductions.

For example, no one would deny that the people of India are a strong, swarthy, brawny, so-called healthy people; yet is there not food for reflection in the fact that the hundreds of millions of inhabitants of this country, in which hygiene is a thing unheard of and undreamed of, should have been conquered and should be held in subjection by the comparatively small population of Great Britain, a country in which the science of hygiene is and has been well understood and heeded in its practical applications.

We should ever bear in mind the fact that the human body is endowed with a wonderful power of adaptability; that nature always endeavors to suit herself to her surroundings, and that whatever may be the environments of an individual, there is always going on within him an effort to harmonize with these surroundings.

A familiar and homely illustration of this law is seen with the boy whose first cigar makes him sick, even unto vomiting, yet who, ultimately, because of the law of tolerance, smokes without visible or sensible ill-effect.

But what has this to do with the question of health, which these cavillers erroneously regard as a positive and not a relative condition? It has everything to do; health is not a positive, but altogether a comparative condition. Those who disregard the laws of hygiene may not, in many instances, suffer from obvious disease, they may seem to have good health; they may even have absolutely good health; but they have such *in spite of* and *not because of* their neglect of hygiene. How frequently do we see those who break the laws of man suffering no penalty therefor, but can we argue from this that our civil code is all nonsense, that no one need obey the law, that all should do as they choose.

When we watch a parade of the veterans of our late war, when we recall the enormous number of these heroes who were assembed but recently in Washington, would it be logical for us to assert that because these men were not all killed, there is, therefore, no danger to life in battle.

When, therefore, we see those who are surrounded by insanitary conditions and whose practices are unhygienic, enjoying seemingly good health, we must not hastily jump at conclusions, but must ever bear in mind the ramifications of the law that "custom breeds tolerance;" we must ever remember that there is no law without its exceptions; we must look below the surface and see whether such persons really enjoy that measure of vigorous health that is vouchsafed to those who live in accord with the laws of nature.

One such well-ascertained fact as the wonderful fall in the typhoid fever death-rate of Munich, when that city was properly sewered, will offset the adverse testimony of a thousand individual instances wherein a neglect of the laws of hygiene *does not seem* to be followed by disastrous results.

NOTES AND COMMENTS

Pure Water *versus* Cholera.

Dr. E. O. Shakespeare, in his "Report of Cholera in Europe and India," calls attention to the significant fact that cholera epidemics in Madras avoid Pondicherry, although it lies directly in their course. The explanation is to be found in the purity of the water-supply, which is derived from artesian wells.

Soap a Medicine.

A Massachusetts judge has just decided that soap is a medicine and that the selling of it is not restricted by Sunday legislation. (*N. E. Drug.*) His line of reasoning is that under certain circumstances a cake of soap may be regarded strictly as medicinal, and, also, that cleanliness is next to godliness. Therefore, to fine a man for selling soap on Sunday would be to make him pay a penalty for performing an act of godliness.

A Village of Congenital Criminals.

Dr. Lombroso, the well-known Italian anthropologist, states that Sighele, a young lawyer, has discovered a village of criminals. It is the village of Artena, which enjoys an infamous notoriety, its inhabitants being robbers, thieves and assassins. In the Italian chronicles of the Middle Ages, Artena already had this reputation. A search through the judical records shows the same names continually appearing—a testimony to the hereditary character of the criminal impulses.

Ventilation by Means of Heated Walls.

An improved system of ventilation has been introduced in the great hall of the new Sorbonne, in Paris, the principle resorted to being that of maintaining the walls at a higher temperature than that of the air which they enclose. In order to accomplish this, a mixing chamber is located beneath the auditorium, and hot and cold air are mixed to the temperature desired; the air is forced into the auditorium through a great number of small holes in the floor and in front of the seats, the opening being covered by a wire netting. Before the entrance of an audience, the walls are thoroughly warmed by forcing air heated to 200° into a conduit which delivers the air into a space behind the moulding and close to the floor. The wall is thus heated to a temperature of 100°—a temperature which, by radiation, will keep the audience comfortable, at the same time ventilating the hall with air at 60°, derived from the mixing chamber. All downward cold drafts are thus prevented, the currents of air all being upward, owing to the heated surface.—*The Sun.*

Prize for Essay on Tuberculosis.

The Congress for the Study of Tuberculosis announces a prize of 3,000 francs for the best essay on "The Means of Diagnosticating Latent Tuberculosis before its Appearance or after its Cure." The essay must be written in French and sent to Dr. L. H. Petit, 76 Rue de Seine, Paris, before April 1, 1893. Each memoir should be accompanied with a sealed envelope containing the author's name and address.

Whale-flesh as a Food.

The flesh of the whale, says *Le Progrès Médicale*, has made its appearance upon the tables of a restaurant-keeper in Paris, who obtained it from a young specimen of *Balænoptera rostrata*, which was cut up for the Museum of Natural History. The meat is very red, and bears a resemblance to a filet of beef. It figured on the bill of fare as filets de baleine and escalopes de baleine à la Valois. Attracted by novelty, many customers partook of the dishes. Whale-meat has a faint and not a very agreeable taste, somewhat similar to that of beef boiled in fishy water. It has not, however, the decided oily flavor which was generally anticipated.

Digestibility of Beef and Fish.

According to the *Boston Med. and Surg. Journal* Popoff's researches on the digestibility of beef and fish after different methods of preparation show that both are more digestible in the raw state than when cooked. The longer beef is cooked, the more indigestible it becomes. After the same method of preparation, except smoking, beef will, in general, be better digested than fish. Smoked fish is more digestible than raw or cooked. On the other hand, smoked beef is peptonized with more difficulty than if in some other condition, perhaps because the digestion is impaired by the strong salting which precedes the smoking. Notwithstanding these facts we advise our readers not to eat raw meat.

Cremation of Bodies Dead with Cholera.

Dr. A. S. Ashmead, late foreign medical director of the Tokio Hospital, Japan, says there are a few things which it would be wise for us to consent to learn from Japan, and one of them is the cremation of all persons dead with cholera. Exclusive of the private establishments of Buddhist burial-places there are in the city of Tokio six public crematories, each large enough to burn twenty-five bodies at a time. It is to be regretted that cremation has not with us that religious origin which first recommended it to the Japanese. Reason and good sense have never proved such strong foundations, otherwise the advisability of the cremation of cholera victims would have occurred to us long ago. In 1866, when a few cholera immigrants had been buried on Ward's Island (N. Y.), an epidemic started almost immediately in the part of the city nearest to that burial-ground.

Cremation in Time of War.

The Paris Cremation Society recently addressed a petition to the French Minister of War, praying him to issue a decree making the cremation of the dead bodies of soldiers killed in battle compulsory as soon as possible after the action. The petitioners express the belief that such a measure would prevent or at least largely mitigate the epidemics which under present conditions are so apt to break out in countries which are the seat of war.

Drawing the Line at Cholera.

The peasants of a little village near Moscow (says the *Medical Record*) fearing an invasion of cholera, put a charm around the place in accordance with an old superstition. Six virgins, led by two widows, dragged a plough at midnight around the village, while a third widow preceded them, carrying a banner with the image of the Holy Virgin. The cholera, as the peasants believe, will never be able to cross the line made by the plough, and as long as they remain within this magic circle no harm can come to them from this scourge.

Hot Baths *versus* Rheumatism.

We have, more than once, referred to our belief in the superior healthfulness of hot over cold baths, and we now find additional proof of the correctness of this idea in the remarks of Dr. Michant, of Yokohama, who tells us, in the *Boston Medical and Surgical Journal*, that, in spite of the fact that the climate of Japan is essentially moist and rainy, rheumatism is almost unknown among the natives, while amongst the Europeans residents there it is almost universal. The immunity of the Japanese he attributes to the very hot baths that are so universal in that country. The temperature of these baths is never less than 107° F., and is frequently as high as 122° F., and they are indulged in at least once and sometimes twice daily.

Where Salubrity is Not.

Dr. Salmons, writing to the *Indiana Medical Journal* from Guanajuato, Mexico, says that with two more deaths a month that town would have a death-rate of 130 to the 1,000, or six times as great as that of the largest cities of civilized countries. The city has 40,000 inhabitants. Most of the deaths were among the very lowest classes, who live in utter disregard of hygiene. Forty-two per cent. of all the deaths in May were of children under one year old, and from two-thirds to three-fourths were caused by diseases of the alimentary and respiratory organs. Of these two classes of diseases there were three times as many cases of the former as of the latter. There were many deaths from small-pox, but the health officer did not even think it worth while to call attention to it, an evidence that, large as the death-rate then was, the disease was not unusually prominent. Dr. Salmons adds, parenthetically, that he has a large practice. There certainly seems to be a field there, adds the *Medical Record*.

A True Sanitary Reformer.

The Ameer of Bokhara recently issued orders for a general cleaning up of this city. Some of his filthy subjects, growling at, and objecting to this order, he at once issued a second decree, ordering the execution of everyone who had not, within a week's time, complied with his previous order. This enlightened conduct of a so-called uncivilized Eastern potentate is well worthy of a measure of imitation in civilized and enlightened America.

The Russian Congress of Hygiene.

The Russian Congress of Hygiene will be held in St. Petersburg, in the spring of 1893, under the protectorship of the Grand Duke Paul Alexandrovitch. The work of the Congress will be divided into five sections, namely: (1) Biology; (2) Sanitary and Medical Statistics, Epidemiology and Medical Geography; (3) Hygiene of Inhabited Districts, Public and Private Buildings and Work-places, Food Supply, Clothing, Cleanliness and Disinfection, Hospital Administration and other Prophylactic Measures; (4) Hygiene of Rearing and Education; (5) Geology, Climatology and Balneology.

Chapped Hands.

The *Medical Record* tells us that Dr. Steffen uses the following for rough and chapped hands:

℞.	Menthol	15 grains.
	Salol	½ drachm.
	Olive oil	50 drops.
	Lanoline	10 drachms.
M.		

When this ointment is applied twice a day, the pain quickly ceases, the skin softens and the rhagades heal.

Periods of Infectiousness.

Dr. Arthur Ransome, Owen's College, Manchester, sought to investigate the period of infectiousness of some of the infectious diseases by means of a circular letter sent to the English physicians. The results arrived at are that measles is infectious before the appearance of the eruption (in one case four days before). The period of communicability extends to thirty-one days after the receipt of the infection. In four cases of scarlet fever the disease was communicated from twelve to twenty-four hours before the appearance of the rash, and in two cases it was communicated six weeks after the cessation of the disease. Mumps was shown to be infectious two weeks after the cessation of the fever, or three weeks altogether. Diphtheria is infectious from the receipt of the contagion until complete recovery, in ordinary cases about thirty-three days. The milder forms of small-pox are infectious five weeks; in the severe forms eight weeks.—*Zeit. f. Schulgesundheitspflege.*

Tea-Drinking.

The *British Medical Journal* in commenting on the death of a boy who died from drinking hot tea without milk, remarks that the tea had been left in the oven for some time, so that it had become a strong decoction of tannin. In being drunk without milk the tannin was not brought into a relatively harmless albuminous tannate. It is on account of this method of making tea that it is so injurious to digestion. Neither the Chinese nor the Japanese, who know how to make tea, use milk with it; but with them the hot water is poured on and off the leaves at the table, and it is drank as soon as it becomes a pale straw color. No people in the world drink so much tea as the Japanese, yet in Japan it is never injurious to the digestion, as by their method of preparation the tannin is not extracted from the leaves.

Chicago Drainage Canal.

The canal which is to take the sewage of Chicago towards the Mississippi and relieve the lake and water-supply from the filth which is now poured into it in large quantities, has been formally begun. This canal will take from Lake Michigan 600,000 cubic feet of water a minute, which it is hoped will be enough to dilute the sewage sufficiently to make the region tolerable through which the canal will pass. From the point at which the Chicago River leaves Lake Michigan to the Union Stock Yards is about four and a half miles, and it is at this point that the canal will leave the Chicago River and run about thirty miles to the Des Plaines River near Joliet. It is estimated that it will take four or five years to complete the work and that the cost will be from twelve to twenty million dollars. The drainage district will comprise the city and considerable outlying territory.

Purifying Water.

Dr. Daremberg, writing in *La Médecine Moderne* concerning the means of rendering a cholera-infected water innocuous, says that this end may be accomplished in one of three ways, viz., by filtering, by boiling, or by the addition of some chemical substance which will destroy the germs of the disease. The first of these methods is, as a rule, ineffective, and can be relied upon only when every detail is most scrupulously attended to. The second is effective but troublesome, and cannot always be carried out, fire and a suitable vessel for boiling being indispensable. The third method is one which, he says, is equally effective with boiling, and which can be carried out anywhere and at any time. The purification of water has been effected through the addition of alum, but the author prefers the acidulation of the water, especially in the case of possible cholera infection. Citric acid may be added to the water in the proportion of sixty to eighty centigrammes to the litre. This method is inexpensive, does not impart any unpleasant taste or odor to the water and can be done anywhere without the need of cumbersome or delicate apparatus. In place of citric acid, tartaric or hydrochloric may be used if desired.

The Baths of Helwan.

Dr. Frederick Peterson (*New York Medical Journal*), describes the Baths of Helwân, in Egypt, believed to be the oldest health-resort in the world. There are about a dozen springs having a temperature of from 77° to 86° F., sulphurous, chalybeate, and saline. The bath-houses are commodious and luxurious. In Egypt is found the type of the warm and dry climate of low altitude. In winter the temperature by day is seventy to seventy-five degrees in the shade; the nights are fresh and cold and often accompanied by heavy dew. The mean annual humidity is about fifty-eight per cent. The average annual rainfall for the last five years is 1.22 inches. The pyramids and mounds of ancient Memphis are in plain view across the desert, while Cairo, fifteen miles to the north, affords inexhaustible resources to the pleasure-seeker.

Oatmeal Bags for the Bath.

Take five pounds of oatmeal, ground fine, a half pound of pure castile soap reduced to powder, and a pound of powdered Italian orris root. Cut a yard of thin cheese cloth into bags four inches square, sewing them together on the machine and taking care not to leave any untied threads where a break may leave the contents ooze out.

Mix the soap, oatmeal and orris root thoroughly and fill the bags loosely. Sew up the opening in each and lay them away to use as required. They are used as a sponge, dipped in warm water, making a thick, velvety lather and wonderfully softening the skin, while the orris imparts a lasting fragrance.

It will be remembered that all soap applications, even the purest, should be entirely rinsed from the skin. Hospital nurses are trained to wash patients first in soap and water, then in clear, very hot water to take off the soap. It is recognized that boiling water is one of the excellent mild disinfectants.

Night Air.

In spite of the popular prejudice against "night air," so called, we have always recommended our patients to use it, because we failed to see how they were going to get any other kind of air at night. Seriously speaking, we have always failed to see the philosophy or logic in the idea that out-door air at night was not good for us. Now we are reminded, by an exchange, that people who live for the most part of the time in the open air, sleeping under hedges, or under the lee of any kind of shelter, are seldom afflicted with diseased lungs; and the number of soldiers who were cured of incipient consumption and kindred diseases, in America, during the war, was legion.

They went away as to certain death, not from shell and bullets, but from exposure to night air.

However, they grew hale and hearty, their coughs left them, their chests deepened, their thin cheeks filled out, and those of them who did not fall in the war came home new men.

A New Hospital Feature for Preventing the Spread of Infectious Diseases.

The *Medical Press and Circular* has a description of a new hospital at Berlin, called the Emperor and Empress Frederick Children's Hospital. The pavilion for diphtherial patients has a peculiar arrangement which is designed to imprison the contagium of that disease, whether brought there or generated there. This pavilion is entered by what is known as the "schleuse," or sluice. No person is allowed to pass directly into the ward from the outside world, but must pass from the porter's room into the "schleuse." There the visitor must take a bath and change his clothes; the same process must be gone through with on leaving the pavilion. The hope is that not only will these precautions prevent the conveyance of the disease to any one outside the hospital, but also to the inmates of other parts of the institution.

Conveyance of Tuberculosis by Bed-bugs.

Dewevre (*Revue de Med.*, No. 4), reports the case of a boy, 18 years old, who developed pulmonary tuberculosis after having slept with a brother who had died of the disease. A third brother, with whom the second had slept, had likewise died of tuberculosis. The patient presented numerous bed-bug bites, and it was learned that the bed in which he slept contained a large number of the parasites. Thirty of these were taken and used in the inoculation of three guinea-pigs, all of which died of tuberculosis. Cultures of tubercle-bacilli were also obtained from the dilute and filtered pulp of fifty of the bugs. Cultures were also obtained from bugs taken from healthy surroundings and brought into contact with the tuberculous sputum. The bugs must become infected directly from human beings, or indirectly through the medium of the expectoration, or by transmission from one animal to another. The transmission of tuberculosis from the bugs to the human beings remains an open question.—*Wiener Medizin Presse.*

Relative Value of Germicidal Chemicals.

As the germ-destroying agents given below are the results, recently obtained (*American Druggist*) by the Health Department of New York City, they may be relied upon as accurate and conclusive. They rank in effectiveness as follows:

Corrosive sublimate, 64 grains to the gallon.
Carbolic acid, 5 per cent. solution.
Bromide, 1 pound to 200 gallons.
Permanganate of potash, 7¾ ounces to 200 gallons.
Chloride of lime, 4 ounces to the gallon.
Sulphate of iron, 1½ pounds to the gallon.
Sulphate of zinc, 4 ounces to the gallon.
Common salt, 2 ounces to the gallon.

Two semi-officinal deodorant solutions are also spoken of—*Liquor Zinci et Ferri* for domestic use where iron is unobjectionable, and *Liquor Zinci et Aluminii Compositus* for disinfecting clothing, etc.

Hydrogen Peroxide as a Disinfectant of Water.

Dr. Altehoefer, after giving references to the literature of the subject, gives his researches on the disinfectant power of H_2O_2 dissolved in water. He finds that the addition of 1 per 1,000 to ordinary drinking water, to drinking water containing sewage, or to water containing typhoid bacilli or cholera bacilli is quite sufficient to destroy the various saprophytic and pathogenic organisms contained under these conditions, if it is obtained perfectly fresh and kept in good condition, and if it is allowed to act for a period of twenty-four hours. It is especially valuable for the disinfection of drinking water because it does not affect the taste, does not alter the color, and in the proportion mentioned is perfectly innocuous. As regards cost, he calculates that sufficient drinking water—say ten litres—for a family may be sterilized by means of H_2O_2 at a cost of about five cents per diem.

Hamburg Water.

The results furnished by a chemical analysis of the water supplied to Hamburg admit of but one interpretation, says *The Lancet*, the water is highly polluted, and it has thus, no doubt, afforded an excellent channel for the distribution of the disease which is causing sad havoc in the city at the present time. A sample of water, taken from the mains by ordinary tap, just as it is supplied for drinking purposes to the houses, was recently procured by Mr. J. B. Coppock, F.C.S., who submitted it to analysis, the details of which appear in the current number of the *Chemical News*. The water is described as turbid and very yellow in appearance, as slightly unpleasant to the taste, as possessing little odor and containing a small and dirty-looking deposit. Microscopic examination revealed animal and vegetable matters as well as mineral particles. The total solids amounted to 81.25 grains, the chlorine to 33.04 grains, the free ammonia to 0.0746 grain, the albuminoid ammonia to 0.0205 grain, the sulphates to 2.37 grains, and the nitrates to 1.95 grain per gallon. Oxygen consumed in fifteen minutes was equal to 0.065 grain, and in four hours to 0.24 grain per gallon. The most striking item is, perhaps, the chlorine. It occurs to an enormous extent and may have been derived from the chlorides in animal evacuations, as in urine, although, on the other hand, there is no evidence that it is not of mineral origin. The nitrites do not appear to have been estimated, neither are any observations recorded as to the behavior of the solid matter on heating. This is regrettable, we think, as the presence of nitrites affords fair proof of the existence of putrefactive matter still undergoing oxidation, while the character of the odor evolved on heating the solid matter frequently indicates whether the contamination is of vegetable or animal origin. Cultivation in nutrient gelatine produced an abundant crop of bacteria —bacilli, micrococci and fungi—but the consumption of the water, Mr. Coppock adds, has not produced any choleraic symptoms in the case of a cat. The water-supply of Hamburg is drawn from the River Elbe.

Paper Money as a Carrier of Infection.

The possibility of infection being conveyed to a large number of persons by means of paper money has often been suggested, and an examination of the notes of the Bank of Spain current in Cuba which has recently been published by Drs. Acosta and Rossi in the *Crónica Médico-Quirúrgico de la Habana* shows that this form of currency is indeed liable to contain septic germs. The notes chosen for their experiments were some that had been in use for a good while and were such as represented values of a few pence only. It was estimated that two notes, weighing altogether about fifteen grains, contained more than 19,000 germs of various kinds. Cultures were made in broth, gelatine and agar, and these were injected into the peritoneal cavity of rats and guinea-pigs, most of which died within twenty-four hours, the post-mortem examination showing signs of peritonitis and congestion of the liver and kidneys. The blood of the heart and peritoneum was made use of to inoculate solid media, in which colonies developed so rapidly that it was impossible to determine their precise nature, many different forms being intermingled.

The Century Magazine in 1893.

The November number of the *Century* begins a new volume and contains the first chapters of a powerful novel of New York society, called "Sweet Bells Out of Tune," written by Mrs. Burton Harrison, the author of "The Anglomaniacs." The illustrations by Charles Dana Gibson, *Life's* well known cartoonist, are as brilliant as the novel.

In this November number begins also a great series of papers on "The Bible and Science," opening with "Does the Bible contain Scientific Errors?" by Prof. Shields, of Princeton, who takes decided ground that the Bible does not contain scientific errors of any moment, and who most interestingly states the case from his point of view. Other articles in this series will include one in the December (Christmas) number, "The Effect of Scientific Study upon Religious Beliefs."

An important series of letters that passed between General Sherman and his brother Senator John Sherman is also printed in November, which number contains also contributions from the most distinguished writers, including an article by James Russell Lowell, which was not quite completed at the time of his death. The suggestion which Bishop Potter makes in the November *Century* as to what could be done with the World's Fair if it were opened on Sunday, is one which seems the most practical solution of the problem yet offered.

The December *Century* is to be a great Christmas number,—full of Christmas stories, Christmas poems, and Christmas pictures,—and in it will begin the first chapters of a striking novel of life in Colorado, "Benefits Forgot," by Wolcott Balestier, who wrote "The Naulahka" with Rudyard Kipling.

Papers on good roads, the new educational methods, and city government are soon to come.

Children's Teeth.

The statistics brought forward by Messrs. David Fisher and George Cummingham (who have so long been indentified with the "cause" of children's teeth), and which have repeatedly been the subject of papers read at the British Dental Association and other societies, are further supplemented by a report by Mr. Denison Pedley. This report is derived from a systematic examination of 1,985 children at the Sutton district schools. Though not so black as some, yet it shows an enormous amount of disease, for out of this number only 527 are recorded as having sound dentition. Mr. Pedley makes some pertinent remarks. The temporary teeth, he says, are popularly thought not to be deserving of any particular attention, whereas much misery and detriment to health may be avoided by judicious treatment. Between the ages of six and twelve there were, according to the table, 758 permanent teeth that could and should have been saved, 201 hopeless and 121 which had already been extracted, most of these being the six-year-old molar, a tooth so often mistaken by parents for one of the temporary set. He suggests that all public schools should have a paid dental surgeon, who should periodically examine all the children and perform any operations—conservative or radical—that are considered to be desirable, and, moreover, that a record should be kept.

The Teeth of School Children.

The first report of the committee appointed by the representative board of the British Dental Association to conduct a collective investigation as to the condition of the teeth of school children was presented at the last meeting of that Society. The committee was convinced "that if more attention were paid to the teeth of children the general sum of public health and well-being would be materially increased, inasmuch as the disastrous effects frequently produced, even in early adult life, by the decay and loss of teeth may, in a very large majority of cases, be traced to disease of those organs in childhood." A further contribution on this subject is a paper by Mr. Denison Pedley and Mr. Sydney Spokes, after an examination of over 900 children, in which they state their opinion that the lamentable state of the teeth from caries ought to be combated by systematic treatment by a qualified dental surgeon appointed to such institutions, and in their report they bring forward many sound suggestions. With regard to the temporary teeth, it is popularly believed that they are not deserving of any particular attention, as in the natural course of events they must give place to others of the permanent set. Whilst there may be some ground for this view, it is nevertheless true that much misery to children, as well as detriment to health, can be avoided by intelligently watching and treating temporary teeth. Between the age of six and seven the first permanent molars appear, and are only too often mistaken as belonging to the temporary set, and these most important teeth are allowed to decay without any effort to save them. Irregularity, which is one of the great predisposing causes of decay, can often be remedied by the removal of certain teeth or by the application of some mechanical apparatus.

Heights.

According to *Good Health*, two or three years ago, Harvard University offered a prize to the man or woman who should show the nearest approach to physical perfection in proportion. The young woman who gained the prize was 25 years of age, five feet five inches in height, and weighed 130 lbs. The male winner of the prize was six feet one inch in height. Dr. Sargent gives the following table of average heights, which he prepared from the statistics of Dr. Weisbach, of Constantinople, who has measured hundreds of individuals of many different races.

	Feet.	Inches.
Henry C. Jackson, Maine	6	1
New Zealand Maoris	5	10⅙
Kafirs of Africa	5	10
Norwegians, average	5	9
Scotch, average	5	8⅓
Swedes, average	5	8
English and Irish, average	5	7⅔
Danes, average	5	7½
Germans, average	5	7¼
Italians, average	5	6¼
French, average	5	6¼
Spanish and Portuguese, average	5	6
Jews, average	5	3

Religion and Sanitation.

There should be a closer relationship between religion and sanitation says *The Monthly Sanitary Record*. There is much truth in the saying that "Cleanliness is akin to Godliness," and cleanliness, which in its broadest sense includes most all of sanitation, may also include Godliness—"Blessed are the pure in heart for they shall see God."

The sick-bed teaches many useful lessons, but good health is the surest basis for good morals.

Deprive a man of his bath and you lower his moral tone. There are good physiological reasons for this. The skin is one of the great purifying organs of the body, and requires frequent cleansing to keep it in healthy action, which is essential for the body's welfare. The effect of impurities left in the blood by neglect of personal cleanliness, and of constantly breathing impure air is to lessen a man's moral obligations to his neighbor. We know that alcohol and other narcotic poisons circulating in the blood exert a profound influence upon the conduct of man. So, too, a disordered liver, by allowing certain products of food digestion which should have been changed or excreted to escape into the blood may cause in us a moral obliquity, of which we are ashamed, but cannot successfully control. Plain, pure food, properly cooked, pure air and frequent baths will keep our bodies sweet and clean and our thoughts pure. The national habit of having a bath and clean garments on Sundays has doubtless a considerable influence on the proper observance of this day.

But think of the moral degradation entailed by a life among the squalor and filth of the slums of a great city! Even without the contaminating influence and bad example of evil companions, how is it possible for humanity to maintain moral uprightness amidst such unsanitary surroundings. It is of little avail to teach religion to persons found here; but give them pure air and sunshine, a good bath and clean clothing and a clean house to live in, and you will have taught them a lesson in right living no words could convey. It is the poor unwashed humanity that the sanitarians are most interested in. It is in darkness, filth and dirt that crime as well as disease is bred; and our ministers of the gospel could do their Master's bidding in no better way than by joining hands with those who are working to improve the sanitary condition of the poor.

SPECIAL REPORTS

State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania.

PRESIDENT,
S. T. DAVIS, M.D., of Lancaster.

SECRETARY,
BENJAMIN LEE, M.D., of Philadelphia.

PEMBERTON DUDLEY, M.D., of Philadelphia.
J. F. EDWARDS, M.D., of Philadelphia.
J. H. McCLELLAND, M.D., of Pittsburg.
HOWARD MURPHY, C.E., of Philadelphia.
GEORGE G. GROFF, M.D., of Lewisburg.
S. T. DAVIS, M.D., of Lancaster.
BENJAMIN LEE, M.D., of Philadelphia.

PLACE OF MEETING,
Supreme Court Room, State Capitol, Harrisburg, unless otherwise ordered.

TIME OF MEETING,
Second Thursday in May, July and November.

State Board of Health of Pennsylvania.

A SPECIAL meeting of the Board was held at the executive office, 1532 Pine Street, Philadelphia, June 29, 1892, at 1.30 P.M. Present: Dr. George G. Groff, in the chair; Dr. J. F. Edwards, Dr. Pemberton Dudley, Dr. Benjamin Lee and Mr. Howard Murphy, C.E.

The special object for which the meeting was called was the consideration of a proposed drainage scheme for the Darby Creek Valley. Mr. Howard Murphy, C.E., Chairman of the Committee on Water Supply, Drainage, Sewerage, Topography and Mines, in submitting plans of the proposed scheme stated that it had originated through the failure of all efforts up to the present time to properly dispose of the sewage from the Devon Inn. A conference on this subject had been held between himself, General Russell Thayer, C.E. and Mr. Rudolph Hering, C.E., at New York, at which it was proposed to devise a comprehensive scheme of drainage for all the villages and properties between Berwyn and Bryn Mawr, and which would eventually be extended considerably further. The plan proposed would (it was also anticipated) relieve the river Schuylkill of a large proportion of its present pollution. The main sewer would empty into Darby Creek, near Garrettville.

The Secretary read a copy of a proposed resolution and letter from General Russell Thayer, C.E., on this subject. On motion of Mr. Howard Murphy, C.E., it was resolved that the Board take a recess to visit Darby Creek and vicinity and inspect the site of the proposed outfall of the system.

After the inspection, which occupied several hours, the Board reconvened at the Colonnade Hotel at 8.30 P.M. The subject was discussed at length in all its relations, the general opinion of the members being decidedly in favor of the proposed plan. But in view of the magnitude of the interests involved and the diverse populations affected, as well as of the absence of two members of the Board, it was deemed expedient to defer final action upon it until the regular meeting of the Board on July 11, and it was on motion therefore so deferred.

The Board then adjourned.

TWENTY-SECOND REGULAR MEETING.

The Twenty-second Regular Meeting of the Board was held at the Supreme Court Room, Harrisburg, July 11, 1892, at 4 P.M. Present: Dr. Geo. G. Groff, Dr. J. F. Edwards, Dr. Pemberton Dudley, Dr. Samuel T. Davis, Mr. Howard Murphy, C.E., and Dr. Benjamin Lee. A telegram was read from Dr. J. H. McClelland expressing his regret at being unable to be present.

In the absence of the President, on motion of Mr. Howard Murphy, C.E., Dr. Geo. G. Groff was called to the chair.

An order of business presented by the Secretary was adopted as the order of the day.

The minutes of the last regular meeting, held at Harrisburg May 13, 1892, and of a special meeting held at the Executive Office, Philadelphia, June 29, 1892, were read and approved.

The Secretary then presented his report, which included the following items:

(1) Appointment of Engineer Inspectors. Immediately after the adjournment of the last Regular Meeting the Secretary conferred with the Chairman of the Committee on Water Supply, Drainage, Sewerage, Topography and Mines, with reference to the districting of the State for the purpose of inspection by the Engineer Inspectors. The result arrived at was that the most natural and convenient division for this object would be that indicated by the natural water-sheds of the State, which would make the ridge of the Allegheny Mountains the dividing line, between the Eastern and Western Districts. This matter having been decided, the Secretary forwarded to Mr. William H. Boardman, C.E., of Philadelphia, Engineer Inspector of the Eastern District, and Colonel Thomas P. Roberts, C.E., of Pittsburgh, Engineer Inspector of the Western District, their respective certificates of appointment, which were suitably acknowledged by them in the accompanying letters.

Mr. Howard Murphy, C.E., requested that this subject be referred to New Business.

(2) A report that typhoid fever was prevailing to an alarming extent at Homewood, Allegheny County, had been received and investigated. Medical Inspector Thompson reported Homewood to be an outlying ward of Pittsburgh, and Mr. W. F. McKelvy, the Superintendent of the Bureau of Health of that city, to whom the complaint was then referred, stated that the trouble was receiving attention, but had been greatly exaggerated.

(3) In accordance with instructions the Secretary had made application to Adjutant-General W. W. Greenland to set apart a number of tents to be used as Emergency Hospitals during the prevalence of epidemics. His reply, which was now read, was to the effect that the canvas had been purchased for the use of the National Guard, and he did not think it within his province to divert it, but that it could be had in emergencies as on former occasions.

(4) Medical Inspector Matthews and Mr. Sloan, Health Officer of Johnstown, both reported a serious epidemic of typhoid fever to be prevailing at South Park during May last. Demijohns were sent the Burgess for specimens of water for analyses. Dr. Henry Leffmann

reported the water to be contaminated, and on the advice of the Secretary its use was discontinued.

(5) In regard to the epidemic of diphtheria which had prevailed at Erie during the past winter, the Secretary, on the urgent request of Medical Inspector Woods, who was the Health Officer, sent instructions ordering both the public and private schools closed. A copy of these instructions was read. The schools were closed within four days of the issue of the order, and the epidemic began to diminish immediately. With reference to the issuing of a regulation on this subject the matter was referred to New Business.

(6) A request for advice as to the taking of an oath by members of a Board of Health or Health Officer had been received from Phœnixville. The Secretary in his reply advised that if Phœnixville was a city there could be no doubt of the necessity of the members of the Board and of the Health Officer being sworn in. If a borough, there was no law upon the subject, unless so provided in the special Act of Assembly conferring the charter. He was in favor of the taking of an oath, as it gave an officer authority and prestige in the eyes of the public.

(7) A telegram was received on May 30 from Dr. H. W. Cole, of Hazleton, stating that a fatal case of typhus fever had occurred at that place. The necessary suggestions for such a case were sent at once by the Secretary. The Health Officer of New York City was also immediately notified of the case. He replied that no case of this nature had passed through that city since the steamship "Masillia's" arrival, and he was quite unable to explain how such a case had got into Pennsylvania, unless through some other port.

(8) Intelligence of the terrible destruction to life and property at Titusville and Oil City on the 5th of June reached the Secretary at Detroit on June 6. He at once telegraphed to His Excellency the Governor inquiring whether the information in his possession led him to consider that the interference of the State Board of Health was necessary or desirable, and to the mayors of these cities inquiring whether tents were needed. A medical inspection of the regions affected was also ordered, and the Boards of Health were asked whether they needed assistance to meet the emergency. The replies of the Governor and the other officials indicated that the Local Boards of Health and authorities were able to cope with the emergency. This was shortly afterward confirmed by the report of Medical Inspector Woods.

On the 10th of June the Secretary visited Oil City and conferred with the mayor and Board of Health. Accompanied by the President of the Board of Health a careful inspection of the entire district was made, and every provision was found being made for the prevention of nuisances and care of the injured. A similar inspection of the Titusville region affected was also made a few hours afterwards in the company of the President of the Board of Health of that city. Much admirable work had also been done here by the Local Board, but the immense area involved and the low-lying character of the district presented considerable difficulty to the authority in abating the nuisances here. About 400 men were actively at work in the removal of debris, application of disinfectants, construction of drains and the opening of thoroughfares. The efficient manner in which these two Boards of Health had met such an overwhelming disaster was a convincing proof of the need of the compulsory establishment of Boards of Health throughout the entire State.

After carefully examining the causes of the disaster by fire in both of these instances, the Secretary was impressed with the fact that oil tanks or refineries should no longer be permitted in exposed positions on the banks of streams where they are liable to be undermined and swept away.

While at Titusville the Secretary was requested by wire to visit and inspect Meadville, portions of which had also been flooded. The flood here had left much offensive debris, but the Board of Health had been taking admirable precautions to prevent any result prejudicial to the health of the city. The conditions at this city are somewhat peculiar as regards dangers from floods. Considerable engineering work and pecuniary outlay will be necessary and are essential to prevent constantly recurring catastrophes. The Secretary declined, however, to promise State aid in the matter. A difficulty having arisen in the City Council with regard to the authority of the Board, the Secretary sustained them in all that they had done and advised them to continue in their important work regardless of opposition.

(9) The Secretary had attended the Eighth Annual Conference of State Boards of Health at Lansing, Michigan. A programme of the proceedings was laid before the Board. The special subject on which he had been directed to report at this Conference was the pollution of streams. A cyclostyle circular requesting data with regard to the pollution of streams throughout the United States and Canada, asking for copies of the laws (if any) of each State and Province on the subject, and inquiring whether they favored legislative action by Congress in regard to this question; or whether they considered it rather desirable that the principal streams be used as sewers and supplies of drinking water be obtained from other sources, had been sent to all the State and Provincial Boards of Health in the United States and Canada. Several of the Southern agricultural States were in favor of the latter, while the majority of the Northern States generally favored Congressional action.

A copy of this circular and the replies to the same were placed before the Board.

The question of the incorporation of this matter in the Annual Report was referred to New Business.

(10) An outbreak of smallpox had occurred at Pittsburgh. The total number of cases reported by the Superintendent, Mr. F. W. McKelvy, to June 18, was five. The usual precautions had been adopted and notifications sent.

(11) A somewhat serious outbreak of smallpox had occurred at a tannery, just outside Condersport. In consequence of the absence, illness, or urgent professional engagements of several of the Medical Inspectors, considerable difficulty had been experienced by the Secretary in obtaining the services of an inspector. Ultimately, Dr. J. R. Thompson, Medical Inspector of the Allegheny District, was secured. He reported that owing to an opinion expressed by one of the resident physicians there had been doubt as to whether the cases were true smallpox or not. He found seven cases of discrete smallpox, confined to two families. One case proved fatal. The disease originated in a Polish family named Pallaskie, six of the cases having developed from the first fatal one. The patients were removed and isolated in a pest-house and every precaution as to disinfecting the houses boiling and burning of clothing taken. No further cases had resulted up to the present time. The report of these cases was made to the Secretary by C. H. Armstrong, Burgess; Mr. James L. Knox, of Condersport; and Dr. Fisher, of Roulette.

In consequence of being unable to make this inspection through illness, and of permanent ill health, Dr. E. D. Payne, the Medical Inspector for the Lycoming District, had felt compelled to resign.

(12) On the 20th of June, Dr. L. H. Taylor reported a case of smallpox at Mill Creek in the person of a Hungarian immigrant, only fourteen days in the country. The patient had come from Antwerp, but the name of the vessel could not be ascertained. The Poor Directors were communicated with and the case promptly quarantined in a pest-house erected for the occasion.

(13) A report of a case of variola at Garland, Warren County, had also been received from Dr. A. A. Woods, but no further information had yet been received from him.

(14) Since the last Regular Meeting eight steamships infected with smallpox had arrived at New York. A list of these and of steamships infected with other diseases arriving at that port was read, viz.:

S. S. "Belgenland," May 14, smallpox and measles.
S. S. "City of Chicago," May 25, scarlet fever.
S. S. "Aurania," May 26, smallpox.
S. S. "America," May 27, scarlet fever.
S. S. "Dresden," June 1, measles.
S. S. "Ethiopia," June 1, measles.
S. S. "Bremen," June 2, smallpox.
S. S. "Siberian," June 4, scarlet fever and measles.
S. S. "Shiedam," June 11, smallpox.
S. S. "Bohemia," June 14, scarlet fever.
S. S. "P. Calland," June 16, smallpox.
S. S. "American," June 17, smallpox.
S. S. "Saale," June 27, smallpox.
S. S. "Waesland," June 28, smallpox.

(15) Since the last Regular Meeting 175 notifications of the existence of smallpox and other contagious diseases on board steamships arriving at the port of New York had been ent to the Burgesses or Boards of Health of towns throughout the State to which immigrants on such vessels were destined.

(16) The Secretary read a communication from the United States Commissioner of Immigration at the port of Philadelphia, stating that notifications of the arrival of infected steamships at that port also would be sent to the Board.

(17) A complaint had been received of the prevalence of a diphtheria epidemic at Seven Valley, York County. Circulars and advice had been sent.

(18) The Secretary had received official notifications of the establishment of Boards of Health at Hazleton, Luzerne County and at Shippensburg, Cumberland County. In each case full sets of documents, including Board of Health Rules and Regulations had been forwarded.

(19) Dr. A. F. Bulmer, President of the School Board of Brookville, Jefferson County, had requested the advice of the Secretary as to the papering of the walls of school rooms. The Secretary had replied that such a system would be prejudicial to the health of the pupils of such schools. Where large numbers of individuals are crowded into comparatively small rooms, the ventilation of which is frequently imperfect, paper soon becomes saturated with exhalations from the lungs and pores of the skin, and thus become a vehicle for the propagation of disease. For the walls of country schoolhouses whitewash, or next to that a hard paint or glaze was recommended.

(20) A complaint of defective drainage at Muncy, Lycoming County, had been referred to Dr. Geo. G. Groff. Dr. Groff stated verbally that he had not yet had time to make the inspection. The report was therefore deferred.

The Board then took a recess and reconvened at 8 P.M. at the Bolton House, when the Secretary's report was continued.

(21) A letter from Dr. Felix Formento, President of the American Public Health Association, to His Excellency Governor Pattison, urging that the Executive Officer of this Board should represent the State at the next meeting of the Association had been referred to the Board by the Governor was read. The meeting would be held in the City of Mexico from November 29 to December 2 next. The matter was referred to New Business.

(22) A complaint of a filthy slaughter-house at Greensburg, Westmoreland County, had been made. The Secretary wrote to the owner and proprietor that if the nuisance were not promptly abated he should direct the District Attorney to prosecute him. This had the desired effect, as he had replied promising compliance with the Board's regulations.

(23) A communication was received from a physician of Steelton and from the Borough Council of Shamokin with reference to the powers of a borough council in enforcing the registration of vital statistics. In his replies the Secretary had taken the ground that if a borough council considered it essential to the protection of the public health that they should possess the knowledge of the health conditions of the borough, furnished by registration, they had full powers to enforce such registration, although there was no act of the legislature specifically conferring this authority.

(24) A nuisance arising from stagnant pools at Morrisville, Bucks County, had been complained of. The Secretary had communicated with the Burgess upon the subject. The reply, made through borough counsel, was to the effect that the nuisance complained of was a private one, with which the corporation was advised not to interfere. The Secretary had replied, approving the decision and stating that the same course was pursued by the Board with regard to private nuisances.

(25) A complaint of the insanitary condition of certain properties at Highland Avenue, near Wayne, Delaware County, had again been received. Mr. R. H. Johnson, one of the contractors, had replied, stating that he was anxious to comply in every respect with the Boards' orders. He denied that any nuisance existed on the property over which he had

control. The other parties, who were probably the chief offenders, had as yet sent no reply.

(26) Complaints of minor nuisances had been received from Greensburg, Westmoreland County; Trainer, Delaware County; Millville Borough, Allegheny County; Oakdale Station, Allegheny County; Mont Clair, Montgomery County; Phœnixville, Chester County; West Bellevue, Allegheny County, and Birdsboro, Berks County. No reply to the usual forms which had been sent in these cases had yet been received, except in the Birdsboro case. This complaint referred to the water supply, and was referred to New Business.

(27) Proposed Drainage System for Darby Creek Valley. The Secretary briefly reported that the neighborhood of the proposed outfall of this system was inspected by the Board on the 29th of June. A fuller report would be made by the Chairman of the Committee on Water Supply, Drainage, Sewerage, Topography and Mines.

(28) A list of the Disinterment Permits, issued since the last Regular Meeting, was presented.

(29) The total number of communications received since the last Regular Meeting had been 322, and the total number sent 300.

(30) Three circulars had been issued since the last Regular Meeting, viz.: Precautions Against Trichinosis (revised) No. 22. The Treatment of the Apparently Drowned or Suffocated, No. 34. Sanitary Protective Associations, No. 36.

(31) The total number of loose circulars distributed since May 13 last, was 1,108, and the number of boxes of circulars was 203. As each box contained 18 circulars, the total number was 4,762.

(32) Additions to Library: Books, 21; Pamphlets, 7.

This concluded the Secretary's report, which was on motion approved and adopted.

Reports of Standing Committees being in order:

(1) Dr. Pemberton Dudley, Chairman of the Executive Committee, reported that since the last Regular Meeting, on May 13, 1892, one Special Meeting of that Committee had been held, at which vouchers, numbered 524 to 536, were examined and approved, amounting to $393.75. The report was approved and accepted.

(2) Dr. Benjamin Lee, Chairman of the Committee on Vital Statistics, reported that the Register of Physicians of Philadelphia just received, showed that 274 physicians had registered during the year, ending July 1, instant, and that 29 physicians had died during the same period in that city. The report was approved and accepted.

(3) Dr. J. F. Edwards, Chairman of the Committee on Preventable Diseases and Supervision of Travel and Traffic, asked permission to report verbally on the subject of "Sanitary Days," which was one of the matters specially referred to this Committee at the last Regular Meeting, with a request to report on same at this meeting. He was not yet in a position to submit a full report. He had communicated with the Secretaries of thirty-seven State Boards of Health in the United States and Canada, and had received nineteen replies to date. Twelve of these replies cordially endorsed the proposal of a Sanitary Day; four did not approve of such an idea, and two or three were non-committal on the subject. The report was approved.

In the discussion which followed, it was generally felt that if the Public School Authorities and State Board of Education could be induced to take an interest in the proposed scheme, much good would probably result. (For this report see page 655).

(4) Howard Murphy, C.E., Chairman of the Committee on Water Supply, Sewerage, Drainage, Topography and Mines, reported verbally that the matter of the imperfect drainage of the Devon Inn had now been before the Board at least two years. This delay was affecting other matters of a like nature throughout the State. He referred briefly to the before-mentioned Conference at New York City on this subject, and stated that if an efficient drainage system could be devised, it would be far better to adopt it at once. The proposal of the Darby Creek Sewerage Company, in the drainage scheme, inspected by the Board on June 29, was to include all the towns and villages on the Pennsylvania Railroad between Bryn Mawr and Berwyn, and would mean the construction of from ten to fifteen miles of sewerage, the outfall being near Garretville. Below that point the Darby Creek was already

much contaminated by refuse from several miles, in fact the water closets belonging to some of these mills were situated directly over the stream. He thought the disposition of the Board should be to encourage the gentlemen who were promoting this scheme, which would be a large and expensive work, and which would provide drainage accommodation for an estimated population of 25,000 people. On the other side of the divide a pumping system could be introduced which would provide for a large amount of the drainage which now finds its way into the Schuylkill River. If this system could be thus protected, it would result in great benefit to the city of Philadelphia. The members of the proposed Company, naturally, did not wish to proceed with this scheme, and, after getting all in readiness at a large outlay, to have the State Board of Health condemn the system and declare it a public nuisance. He would recommend the proposed point of outfall in preference to carrying it to tidewater, as it would afford a better opportunity for aeration and dilution. The further consideration of the subject was referred to New Business.

Mr. Murphy further reported that the drainage systems of the city of Erie and of the Norristown Insane Asylum were still under consideration.

On the motion of Mr. Howard Murphy, C.E., seconded by Dr. J. F. Edwards, the condition of the sewerage system of the State Hospital for the Insane at Norristown, was referred to the Committee on Water Supply, Drainage, Sewerage, Topography and Mines, with instructions to carefully investigate the condition of the effluent and report. The report of the Committee was accepted.

(5) Dr. George G. Groff, Chairman of the Committee on Public Institutions and School Hygiene, reported that the Committee recommended that a copy of the resolution passed at the last Regular Meeting in regard to the contagiousness of consumption be sent, together with circular No. 28, to all penal institutions throughout the State. The report was accepted.

(6) Dr. Pemberton Dudley, Chairman of the Committee on Adulterations, Poisons, Explosives and other Special Sources of Danger to Life and Limb, reported verbally that the proposed Paddock Pure Food Bill was still before Congress. Several medical societies had adopted resolutions in favor of this bill, and the Committee recommended similar action by this Board. Analyses of several of the so-called cod liver oil emulsions had been made by Professor Henry Leffmann recently. The percentage of pure oil found in these emulsions varied from fifty to as low as ten, while one (Wampole's) was found not to contain any oil at all. The report was accepted.

(7) Dr. Samuel T. Davis, Chairman of the Committee on Sanitary Legislation, Rules and Regulations, referred briefly to the approaching session of the Legislature. The Committee recommended that a general bill for the organization of Local Boards of Health; a bill for increasing the powers and the appropriation of the State Board of Health; and other bills which had failed in previous sessions be introduced. Also that a circular be prepared and sent to every member of the Legislature setting forth the necessities of the State in the matter of sanitary legislation. The Committee proposed later to hold a meeting for the drafting and formulating of these bills. The report was accepted.

(8) Nomination and election of a president for the ensuing year being in order, Mr. Howard Murphy, C.E., nominated the Hon. Samuel T. Doyle, M.D.; Dr. Pemberton Dudley seconded the nomination. On the motion of Mr. Howard Murphy, C.E., seconded by Dr. Benjamin Lee, the nominations were closed. The Chairman appointed Mr. Howard Murphy, C.E., as teller. The teller announced the result to be one blank, and five votes for Dr. Davis, and the Chairman declared Dr. Davis duly elected. Dr. Davis, in taking the chair, briefly thanked the Board for the honor conferred.

New Business being in order, the Secretary reported that the Philadelphia Board of Health had approved an ordinance prohibiting the keeping of swine within the city limits. It was feared that this would result in the creation of many piggery nuisances just outside the city limits, and the Secretary would suggest in anticipation of this that the Board prohibit the keeping of swine within a certain (at present undefined) limit. The sense of the Board was that it would be wiser to meet each individual nuisance as it arose.

The Secretary stated that the bill for the protection of forests, introduced in Congress by Senator Paddock, had passed the Senate, and, on his motion, the Board instructed the Secretary to express its hearty sympathy with this movement, and to communicate the same to Senator Paddock.

The Secretary reported the prevalence of cholera in Europe, and asked the sense of the Board as to issuing a special circular, calling upon the people throughout the State to take the necessary precautions against this disease. He had already issued the usual circulars upon the subject. It was generally felt that such a circular would at the present time be premature. On motion, it was resolved that the Secretary take action on this subject when in his discretion it should become imperative.

In consequence of ill health the Medical Inspector for the Lycoming District, Dr. E. D. Payne, of Towanda, had resigned. On the motion of the Secretary the resignation was accepted.

The Secretary proposed the names of Dr. E. T. Stevens, of Athens, and Dr. S. M. Woodburn, of Towanda, as proper persons to fill the vacancy. Mr. Howard Murphy, C.E., seconded the nomination of Dr. S. M. Woodburn. On motion of the same gentleman, seconded by Dr. J. F. Edwards, the nomination was confirmed, and the President declared Dr. S. M. Woodburn duly appointed Medical Inspector for the Lycoming District.

Dr. Spencer M. Free, Medical Inspector for the Western Slope District, had lately ceased to reside in the said district, and had felt compelled in consequence to notify the Secretary of his early resignation.

The recent calamities at Oil City, Titusville and Meadville, and the evident insecure condition of certain dams throughout the State—such as that at Pottsville—had led the Secretary to suggest to His Excellency the Governor the importance of appointing a State Commission for the inspection of all dams in Pennsylvania. The replies of the Governor on the subject were now read. After some discussion the following preamble and resolution were offered by Mr. Howard Murphy, C.E., seconded by Dr. J. F. Edwards:

WHEREAS, A communication from His Excellency, the Governor, concerning the inspection of dams has been presented by the Secretary; and

WHEREAS, It has been the special duty of this Board to become particularly familiar with the very serious unsanitary conditions which have been created by the failure of dams, and the lack of provision of adequate channels for the carriage of storm-water in the cases of Johnstown, Oil City, Titusville and other localities; therefore

Resolved, That the Board heartily approve of the proposed creation of a Commission to inspect the dams and waste-ways of the State as a sanitary precaution, but as so many other than sanitary questions are involved, such as the loss of life and property, they would respectfully suggest to His Excellency, the Governor, that a recommendation to the legislature to this effect emanate from him.

The resolution was adopted.

The Secretary presented accounts, which had been audited and approved by the Executive Committee, amounting to $393.75, and covering vouchers numbered 524 to 536. The accounts were on motion approved.

On the motion of Mr. Howard Murphy, C. E., seconded by Dr. George Groff, it was resolved that copies of the Minutes be submitted to each member as provided, and that they be approved by the Board before being transcribed in the Minute Book.

On the motion of Mr. Howard Murphy, C. E., seconded by Dr. J. F. Edwards, it was resolved that the names of the mover and seconder of each resolution be hereafter entered in the Minutes.

The subject of a dividing line between the Eastern and Western Districts with regard to engineering inspections was, on motion of Mr. Howard Murphy, C. E., seconded by Dr. Benjamin Lee, referred to a committee consisting of Mr. Howard Murphy, C. E., and Dr. J. H. McClelland, with power to act.

With reference to the action of the Secretary in the closing of public schools during epidemics in the interval of meetings of the Board, it was resolved on the motion of Mr. Howard Murphy, C. E., seconded by Dr. J. F. Edwards, that a regulation conferring the necessary authority on the Secretary be drafted and submitted to the next Regular Meeting of the Board.

The petition from certain citizens of Titusville requesting an inspection of the devastated region in that city, together with His Excellency's letter accompanying the same and also requesting the Board to inspect the districts affected, together with the report of the City Engineer of Titusville, were now read and the accompanying plan examined. After careful consideration, the opinion being expressed that it was outside the province of the Board to recommend the legislature to make appropriations and expend the State moneys in the way asked by the petitioners; on the motion of Dr. Pemberton Dudley, seconded by Dr. J. F. Edwards, the Secretary was instructed to cause an inspection of Titusville to be made in reference to the sanitary condition of that city as affected by the recent flood and to submit the report of such inspection at the next Regular Meeting.

Resolved, That the information obtained by the Secretary in regard to pollution of streams and laws of the several States on this subject be embodied in the Annual Report in connection with the opinions of Alfred Lee, Esq. on this subject.

In the matter of sending a delegate to the next meeting of the American Public Health Association at Mexico, on the motion of Mr. Howard Murphy, C. E., seconded by Dr. J. F. Edwards, it was *Resolved*, That the matter of sending a delegate to this meeting be deferred to a future meeting.

Dr. Benjamin Lee moved, Dr. Pemberton Dudley seconded that the subject of the Birdsboro inspection be referred to the Committee on Water Supply, Drainage, Sewerage, Topography and Mines. It was carried.

On the motion of Mr. Howard Murphy, C. E., seconded by Dr. J. F. Edwards, the matter of the drainage of the new House of Refuge was referred to the same committee.

Dr. Groff moved, Dr. J. F. Edwards seconded, that the Secretary of the Board be authorized to communicate to the heads of all penal institutions in the State the resolution of Dr. Pemberton Dudley on the contagiousness of tuberculosis, and to accompany the same with the circular of the Board on consumption.

The proposed scheme of the Darby Creek Sewerage Company was now called up. The following preamble and resolution were offered by Mr. Howard Murphy, C. E., seconded by Dr. Benjamin Lee:

WHEREAS, The territory between Berwyn and Bryn Mawr is absolutely in need of proper drainage; and

WHEREAS, Unless some practical scheme be adopted disastrous results may speedily ensue; and

WHEREAS, No better means of securing thorough drainage can be adopted than to drain said territory by properly constructed and laid underground pipes, connected with the Darby Creek.

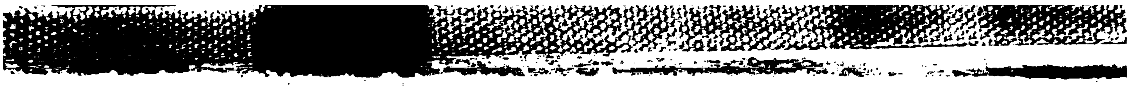
Resolved, That we do approve and recommend the adoption and construction of a system of underground drainage of said territory with properly constructed and laid pipes into Darby Creek at a point not higher up stream than a point below the dam on the Levis Estate near Garrettsville; provided that all solids be intercepted and cremated, or otherwise rendered innocuous, and provided that all other details of arrangement be such as to avoid the creation of nuisances prejudicial to the public health, and provided also that the sewer be so located that it can be readily extended to tide water if the protection of the public health demands it.

The preamble and resolution were adopted.

On motion of Mr. Howard Murphy, C. E., seconded by Dr. J. F. Edwards, it was

Resolved, That the Committee on Sanitary Legislation, Rules and Regulations be instructed to prepare a bill to be presented to the next legislature, to confer on sewerage companies the right of eminent domain for carrying sewers through private properties.

The Board then adjourned.



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